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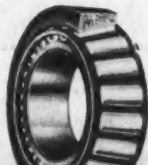
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Because all direct contact and wear between wheels and axles is eliminated. The bearings themselves can be *adjusted* for the wear that *must* follow motion, to function as when new.

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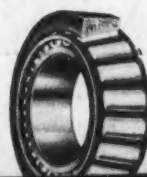
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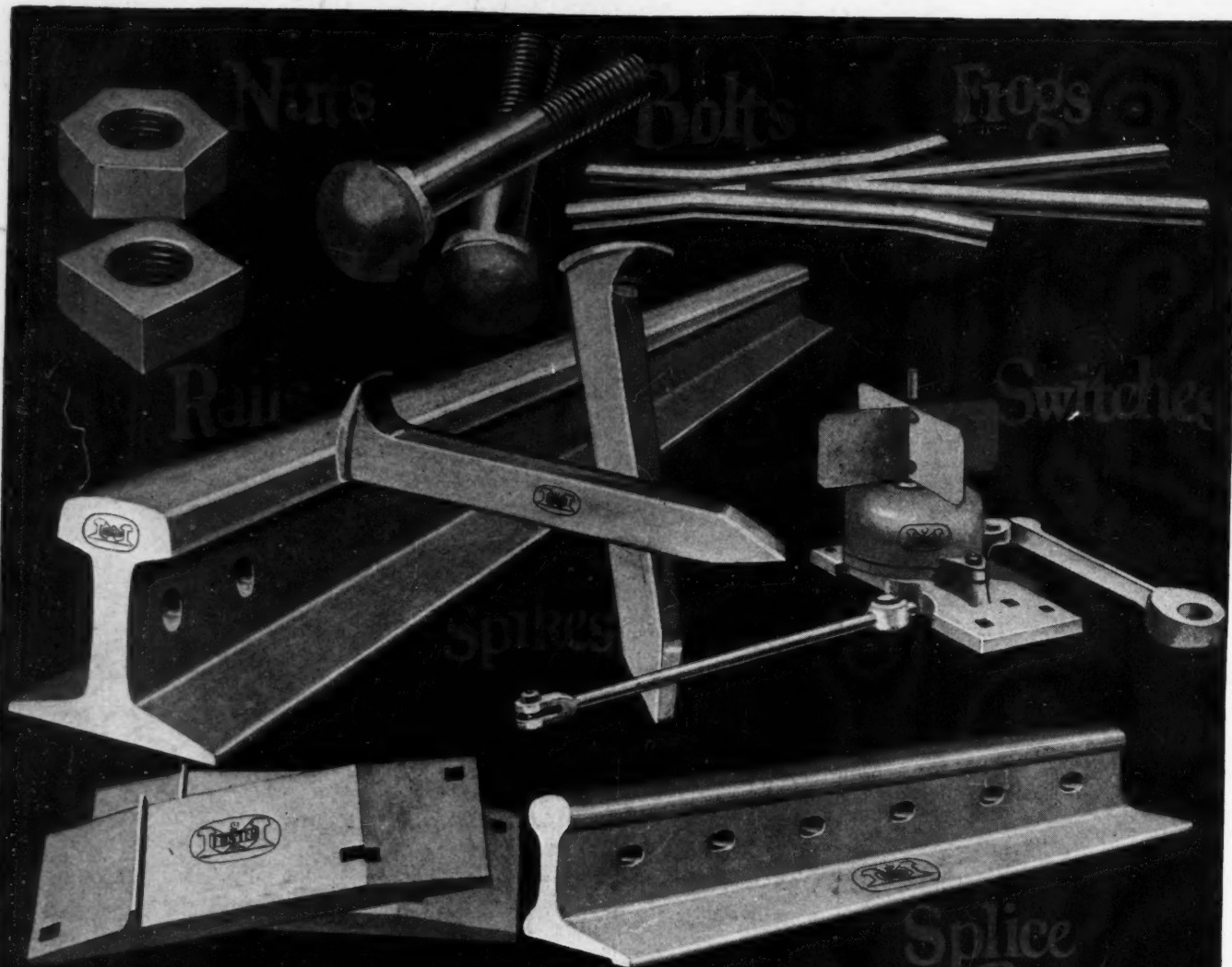
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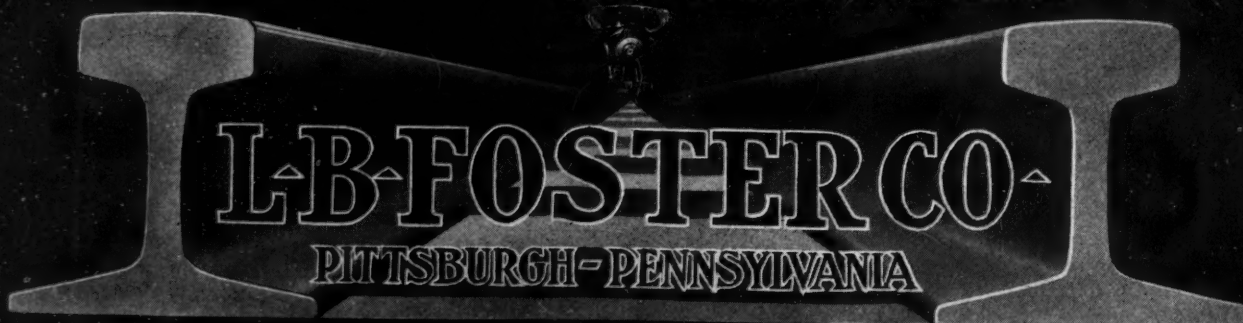
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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 24

NEW YORK, OCTOBER 11, 1923

Number 15

More Pay—But Less Coal?

NOW that the anthracite miners have gained their uniform eight-hour day—and 10 per cent more pay—it will be interesting indeed to see which way the production per man will tend. In a statement issued immediately after the settlement President Lewis, declared the miners could have won all their demands after a full-length strike and would have done so had it not been that the representatives of the mine workers were "fully conscious of the public interest." He said further that the miners have "the natural desire that goes with good citizenship, to obviate public embarrassment and discomfort."

If he means what he says he will encourage the men in the anthracite fields to produce and handle all the tonnage of which they are capable in their new eight-hour day every day the whistle blows. That certainly will be in the "public interest" and will help "obviate public embarrassment and discomfort" because it will be a real influence in restraint of the rising cost of anthracite to a public that is already paying heavily for that fuel. Any mine can produce coal cheaper when it is working at capacity, for its full eight hours than it can when its tonnage men at the faces begin slacking off at 2 p.m., leaving little for the rest of the employees—usually more than 50 per cent of the total—to do the remainder of the day except draw a full day's pay.

Somehow one is doubtful that Mr. Lewis intends to give any such encouragement. Instead, the leader of the union appears to be doing his best to make the men feel dissatisfied with their 10-per cent increase. They are encouraged to think the companies owe them more than they are getting. In one breath Mr. Lewis told them he had won for them a notable victory, and in the next that the new wages "are not sufficient to compensate the mine workers for the particular service they render." There certainly is nothing in history to indicate that unionism teaches men to deliver a full day's work in the anthracite mines. Every increase in pay and improvement of conditions since 1900, when the union got its foothold in anthracite, has failed to stop the steady decline of production per man, so there seems to be no hope now.

Cash Value of a Convention

THE value to the coal industry of a convention such as the American Mining Congress tried to have at Milwaukee two weeks ago, and such as it should have in the future, has an illustration in the Middle West. Loss of coal by overshooting is a common liability. It is especially common in one particular region where too heavy shots have blown coal to dirt for so long that it was accepted as something that was too bad but probably could not be helped. Two months ago an operator in that region was asked to present at the

Mining Congress convention a study of explosives and their proper use. The operator got busy learning all practices in his own territory.

By the time his paper was prepared for the Congress-Milwaukee convention he was so impressed with the losses his own company had been suffering from hard shooting that he was no longer lackadaisical about it. He was so surprised to find that the average shotfirer in his employ was an intelligent and conscientious workman that he wondered why he had never tried to get acquainted with him before. And he found the average shotfirer was so heartily in accord with him in the belief that lump coal could be increased by more careful shooting that he wondered why he had never before enlisted his shotfirers' aid.

The conference on coal shooting which the operator led at the convention raised wideawake interest. This interest was heightened by the fact that he brought some of his own new-found, intelligent shotfirers to the meeting to clinch his points with practical comments.

Aroused, he went home and started a movement in his own mine for more careful shooting. Other operators say they are with him. Leaders among his own employees say they are with him. And so, after all these years of accepting things as they were, something is happening in that region which may add 10 or 15 per cent to the proportion of lump coal the field produces. And it is principally because that operator was called upon to talk at the convention. There are benefits to conventions of that kind. Let us have more of them. And let coal men take part in them.

When a Little Less Is Something More

TO THE operator standardization appears solely as a call to give up certain of his equipment and substitute other of a more general applicability. He realizes that as soon as standardization prevails at his mines—if he has mines with many gages and many types of machinery—he will not have to keep so large a number of spare parts and that, moreover, his motormen and electricians will have less difficulty in understanding the machinery and will therefore be able to maintain and repair it much more readily. There is perpetual labor turnover where a man is turning from one machine to another of a type with which he is unacquainted.

Immersed in his own problem the operator does not appreciate just how the manufacturer views the matter. Here are two makers of some one class of machine. Their designs are different; both are good. If one manufacturer decide that standardization is desirable, he must get the other to assent to it. The maker of one machine must copy that of his rival or the rival must copy his or both must copy from each other to get a new machine that will serve as a standard for both.

In either case whatever concern does the copying

breaks from its own standard and all its clients buying its machines thereafter have difficulty with their stocks. They have thereafter two makes of machine. In fact as far as the change is made in the direction of copying the rival manufacturer's standards the consumer has the equipment that accords with that made by a rival instead of that which accords with that made in the past by the firm from which he has been buying.

During the war it was possible to wipe out such differences between manufacturers but the process did not go far. Any single item, of course, can often be dispensed with if it is not too intimately associated and fitted into other items. It is easy to change the bowl seat on an agricultural tractor but difficult to change a design in a motor if as a result of the change the new part will not fit the old part, making it necessary for manufacturer and consumer to keep large stocks that will accommodate both the old and the new equipment.

Standardization is so important, however, that clamor must be continued in its favor. Only perpetual effort will effect that which is so desirable. Certainly we should arrive at a condition under which it will be possible to have each manufacturer reduce his designs nearer to a standard and make his machinery as far as possible aggregations of a few standards. No one would make a mine car with all its rivets or bolts of a slightly different size, but we sometimes do almost as ill. In a single piece of machinery there often is altogether too much diversity. It is better to have a design which is in places too strong if thereby we can avoid having too many replacement parts.

By keeping this subject alive the American Mining Congress is performing a service to the industry. The manufacturer with too long a line is not a friend of economy. He serves well neither the operator nor himself. A variation that has no justification is to be avoided for the good of all concerned.

Earthquakes and Music

THE condition of a man's stomach has a good deal to do with his state of mind and tone of voice. In Illinois, where union coal miners' stomachs have been full for years, do we hear any sweet union utterances of brotherly love for operators? We do not. Instead, seismographs record the disturbances set up by union demands and condemnations. But how is it in that part of the State of Washington covered by District 10 of the miners' union organization? The tone of the union official voice is melodious and soothing there, for a man eating only one meal a day, so to speak, and that one paid for by a public that grudges the high cost of it, realizes that he cannot get the other two by raucous roaring. So peace reigns in District 10, albeit a worried peace.

Last April the miners of that district, after a long and losing battle for standard union wages, took a 10-per cent reduction with greatest reluctance because there was absolutely nothing else to do but starve. The coal of the region simply could not be sold when the production cost included the country wide union scale. The market for it has been limited indeed, even with wages 10 per cent below the scale, thanks to competition from oil, wood, and coals from Canada and non-union Northwestern fields. Any coal mine in that territory has market difficulty enough even at favorable wages. It is not a question of what operators wish to pay. It is a cold question of economics.

But the union miners of Washington with their one meal a day are not convinced. To them the whole source of their trouble is non-unionism in their own state, in Vancouver Island, in Colorado, Utah and North Dakota. Could they but solidify the miners in those districts and level up by force the scale of wages, their troubles would be over. So their perennial campaign is on once more. There must be something going on lest the union organizers be out of a job. The foundation for the campaign is harmony. Everything possible will be done to convince the whole West that union miners are a sane, reasonable and peace-loving class of men. Those in Washington are doing their level best to prove that unionism is willing to give and take and that it is easy for peaceful relations to exist between miner and operator.

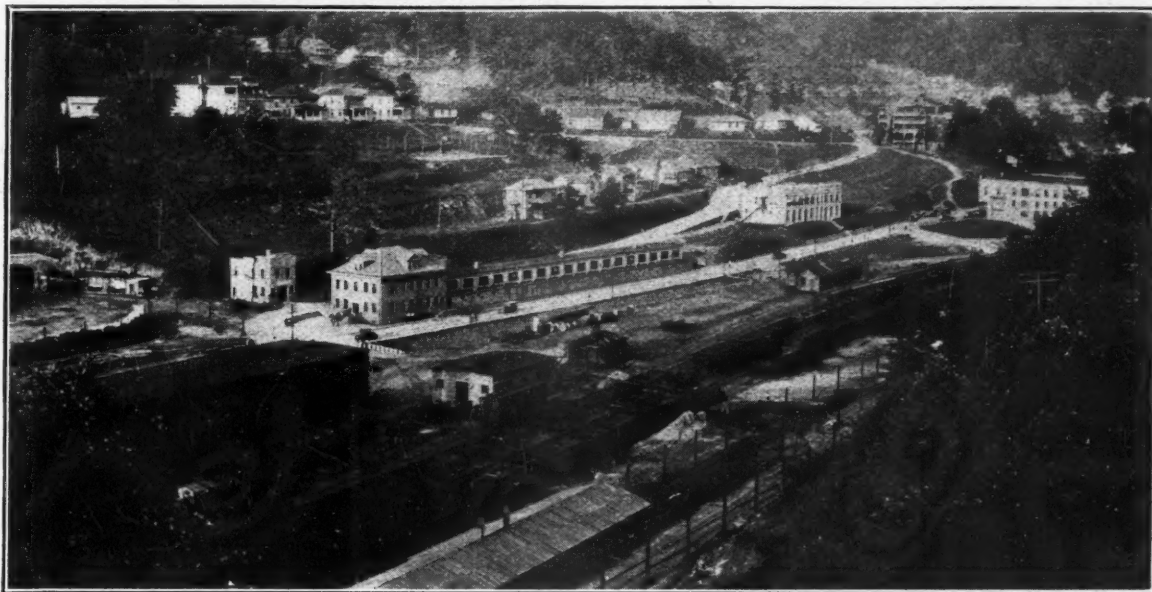
So far as the average rank and file miner is concerned, such a Utopian condition could exist. The operator of non-union Colorado and non-union Utah does not feel that the average of his men is vicious. It is as high an average as that of most other industries where friendly relations are maintained between employer and employee. But unfortunately the average opinion of miners is lost when unionism enters. Only the opinion of a dominating few strangers prevails. That is the main reason why there is so little mutual satisfaction in dealings between the operator and the miner of Illinois or any other solidly unionized state. That is the reason why the seismograph records the crashing official utterances of unionism in well-fed Illinois while today in District 10 of Washington a delicate phonograph recorder makes music of union words.

SOME CHICAGO RAILROAD MEN say the coal industry ought to have a labor board such as the railroads now have. In spite of its drawbacks and lack of power to enforce decisions, the labor board has improved conditions, and it ought to stop a lot of striking and grief in coal, they insist. They forget that such a board might, perchance, make a decision running counter to the wishes of John L. Lewis. Would it be obeyed? Did John L. Lewis obey the President of the United States just before the great strike of 1922? Does the miners' union obey anything or anybody? The answer is, "Pfft!"

STEINMETZ, THE ELECTRICAL WIZARD, believes he is 25 years ahead of his time with his prophecy that full use of electrical machinery will produce a four-hour well-paid working day. He ought to meet some of these union Illinois loaders coming out at noon after a fair morning's turn of cars and with \$10 due. They haven't waited 25 years and they refuse to use electrical loaders.

IT IS REALLY TOO BAD that some of these newspaper editorial writers who hoot at the United States Coal Commission could not have been on the Commission. Immersion for a year in the Sargossa Sea of the coal industry might impart some idea of how hard it is to straighten everything out with a few bold strokes. They should ask the editor-commissioner from Atlanta. He knows.

ONE OF THESE DAYS a man is going to devise a settlement of a strike that will not add to the public's burden of cost; and a grateful nation will probably elect him permanent dictator, or something.—*N. Y. Sun and Globe.*



*Town and Plant from Slate Conveyor**

Lynch Mine, Its Record Production and Operating Data

Every Mine Engineer Will Be Interested to Measure Results with Those of Biggest Producing Coal Mine in World, Remembering, Moreover, the Operating Difficulties of Lynch Field

BY ALPHONSE F. BROSKY

Assistant Editor, *Coal Age*, Pittsburgh, Pa.

BY PREPARING on the tippie and shipping 12,880 tons of coal in a single shift, the United States Coal & Coke Co. at the Lynch operation, Harlan County, Kentucky, achieved a world's record for the tonnage both prepared and loaded in a single day at a single coal preparator. Not even the huge breakers in the anthracite field have ever equalled this record. However, mere grossness of tonnage is of less importance to us than the significance which may be attached to it as a measure of advanced development in mine-plant layout.

If anything of the spectacular could be attributed to this record it would be the ease with which it was made. Without advance notice to the men and with scarcely a flurry, 6,784 tons of coal which was mined fresh that day, 2,587 tons held in the storage bin and 3,509 tons in mine cars were passed in one shift over the screens and picking tables to the railroad cars on three tracks under the tippie.

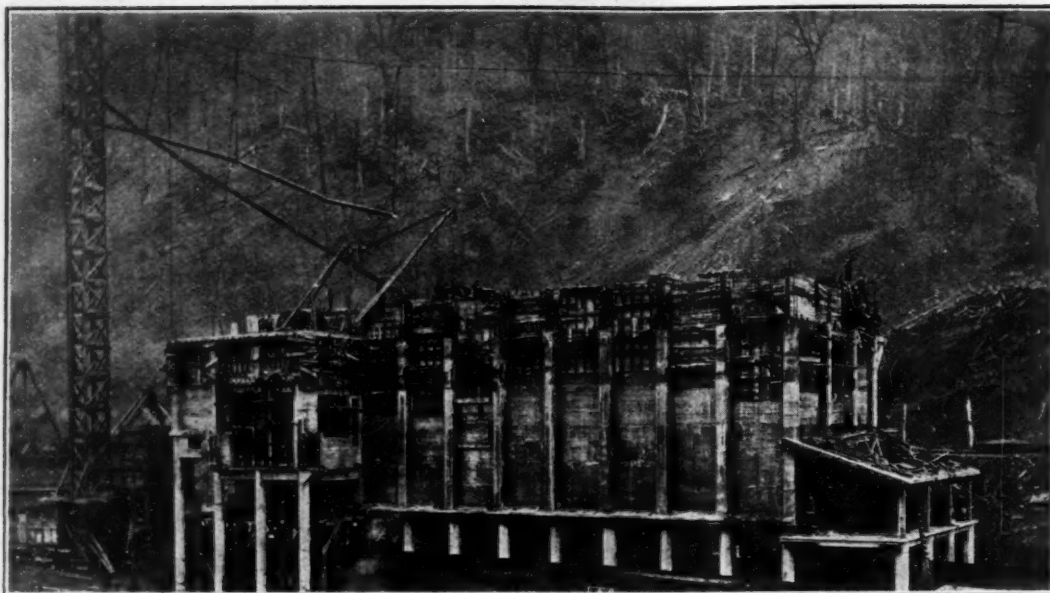
Another record was posted at Lynch when 167,346 tons of coal was mined during the month of May, 1923. This record supersedes that made at the Zeigler mine of Illinois in the month of March last year. The accomplishments at these operations are not to be compared, for conditions are vastly different. At the Zeigler mine coal is hoisted in skips up a single shaft.

*The headpiece shows in the foreground the dumhouse for No. 31 mine and somewhat further back the machine shop. In the rear is the opening to Mine No. 30, the bathhouse, the bank, the residences of the officials, the store and the hotel. The storage tracks above the tippie will hold more than 200 railroad cars.

Coal is won at the Lynch mines by drift mining, the coal being hauled from two openings on either side of a single tippie. In this regard Lynch had the advantage. But in the matter of grades of haulage roads and conditions favorable to mining, Zeigler had "the edge" as compared with Lynch because at the latter mine the coal is not flat, as in the former, but rises and falls everywhere in the territory thus far developed. It is not, however, my purpose to detract from the glories of either of these two mines. Following a statement of facts and conditions which governed them, comments will be made on the methods employed and on the equipment used at Lynch, which enabled a large production to be made despite difficulties in mining.

MAY PRODUCE TWO MILLION TONS THIS YEAR

Insufficient car supply, which has prevailed in practically all parts of the country, has had its effect on production at Lynch by making impossible greater development than that absolutely necessary to maintain a somewhat constant daily output. Indicative of this condition are the figures of production for the years since the mine was opened in the autumn of 1917. The production for that year was 12,392 tons; in 1918 it was increased to 541,344 tons, followed by 1,242,639 tons for 1919. For 1920 and 1921 the yearly productions were 1,338,707 and 1,541,629 tons respectively. In 1922 the production fell to 1,217,323 tons, due to a railroad strike. But for the first six months of 1923



Constructing Coal Bin

Tippel bin has a capacity of 5,000 tons and is said to be largest structure of its kind in the world. It was the biggest item in the cost of the tippel, but it is paying for itself by providing steadier operation. Note the elevator tower and suspended spouting by which concrete was poured into forms.

the output bounded to 1,004,424 tons, and no doubt it will pass the two-million mark for the entire year.

In less than six years the two mines at Lynch have developed to such an extent that they load over one tippel a production greater than other large mines which have reached the apex of production. At that, the mines at Lynch are still in their infancy. Some day each will produce more coal than has thus far been obtained from a single opening, and their combined tonnages will pass over the one tippel at the rate of 2,000 tons per hour.

The combined daily output from these two mines, which has averaged about 6,000 tons, cannot well be increased until such time as the carriers upon which its transportation depends can be so equipped as to assure a sufficient car supply to warrant that larger production. The town of Lynch has not been enlarged since its first construction, for this very reason. Only as many houses have been provided as are necessary to meet the requirements of the men needed to mine the coal that can be shipped. Likewise, no more men have been employed than can be assured a whole day's work on each working day. This is a rule which must be followed to obtain highest efficiency in mining.

However, the short supply of railroad cars which has acted as a deterrent to large production at Lynch afforded an opportunity to test the functioning of the enormous tippel running at 71.5 per cent of capacity. On the two working days preceding Feb. 12 no railroad cars were received. A delay in transportation and not a shortage of railroad stock must have been the cause of this failure, for on the big day 230 railroad cars were delivered. Each had a capacity of 56 net tons and all were loaded that day. A surplus at the end of the day's run was sufficient to fill 12 additional railroad cars.

A train made up of all these cars would be 1.65 miles long. Still more vivid than this mental picture is that of as many Lynch mine cars made into one trip as would be needed to hold the shipment for that day. Such a trip would be about 12 miles long. The principal roads in the two mines are laid with 40- and 60-lb. rails. The total length of roads equipped with rails of that length is 38 miles. Consequently the trip suggested would be one-third the length of these roads.

Incidentally the shipment represented about 0.75 per

cent of the total production of bituminous coal in the country for that day. Calculating the output of Lynch in another way, about 267 mines having the average production of Lynch could meet the present consumption of bituminous coal in this country. Less than one hundred operations having the ultimate capacity of the Lynch mines likewise could meet this market. We know that our coal bodies are not such as to make feasible the working of so many mines of gigantic output; nevertheless we can visualize what savings might be effected by such mass production. It is some assurance to know that the amalgamation of small into fewer large companies would partly bring about this change. Certainly with the stabilization of production, which is so fondly looked for in the future, a movement will be launched in this direction.

As has already been said, of the shipment that day, not all was fresh mined. On the two idle days preceding, development work was prosecuted as usual and in those working places needing attention coal was mined. In every mine there are places in which the

TABLE I—TONNAGE AND MEN EMPLOYED BY SCHEDULES,
MAY, 1923

	Tonnage	Company Men	Coal Loaders	Slate Loaders	Machine Men	Top Company Men	Underground Company Men	Company Men On Night Shift	All Men
May 1	5,890	705	446	76	78	286	348	71	1,306
2	6,099	752	440	116	78	282	382	88	1,385
3	6,374	760	476	114	78	285	389	86	1,428
4	5,590	741	488	114	80	283	382	76	1,42
5	6,286	749	502	91	76	286	368	95	1,418
6 Sunday									
7	6,534	720	468	111	82	284	365	71	1,380
8	5,794	740	539	95	78	287	388	65	1,452
9	6,542	737	511	99	80	285	376	76	1,429
10	6,787	748	563	64	80	288	380	80	1,455
11	7,089	762	552	86	76	286	391	85	1,476
12	6,663	736	531	88	74	289	370	77	1,439
13 Sunday									
14	5,379	687	417	80	74	287	319	81	1,258
15	6,402	702	472	102	76	282	369	51	1,352
16	4,988	729	426	105	74	285	369	75	1,334
17	6,561	789	485	99	78	283	357	89	1,451
18	6,476	738	482	102	76	286	383	69	1,399
19	6,020	771	425	109	74	284	413	74	1,378
20 Sunday									
21	5,642	779	419	82	72	287	410	82	1,352
22	5,426	802	463	120	74	285	443	74	1,459
23	6,569	829	470	136	70	288	450	91	1,505
24	6,790	802	494	127	74	286	432	84	1,497
25	6,960	806	510	114	78	289	430	87	1,508
26	6,352	804	470	128	78	287	424	93	1,472
27 Sunday									
28	5,676	725	403	82	78	282	379	64	1,288
29	6,231	746	450	113	78	285	402	59	1,387
30	5,712	783	453	130	78	287	413	83	1,444
31	6,524	797	479	99	76	290	421	86	1,451
Average	6,200	757	471	103	77	285	390	78	1,411

mining must be continued from day to day if the coal reached by them is to be completely recovered with the least effort or with the least exposure of the miners to danger. Especially is that true of pillar sections where a wing pillar or a stump has been left standing.

At Lynch the absence of railroad cars does not halve such work; though several days may pass without a delivery of cars, the most important work continues because facilities are afforded for the storage of the coal in the bin on the tippie and, if need be, some of the coal can be stored in the mine cars. Such a condition prevailed when the whistle blew on the morning of Feb. 12 and the tippie machinery began to move. In the bins were 2,587 tons of coal and on the tracks were 1,426 loaded mine cars, of which number only 1,148 contributed to the day's production. When all the railroad cars were filled, 278 mine cars filled with coal were left undumped.

Fresh-mined coal on that day aggregated 6,784 tons, which was loaded into 2,463 mine cars by 553 coal loaders. The average output per loader was 12.25 tons. It is less than that for the month of May, when the average output per loader per shift was 13.05 tons. It is natural to expect a change from time to time in the rate of loading coal where conditions are different from day to day. One day a working place may be on the level; the day following it might dip or rise. More will be said in a later article about these conditions and the difficulties in mining.

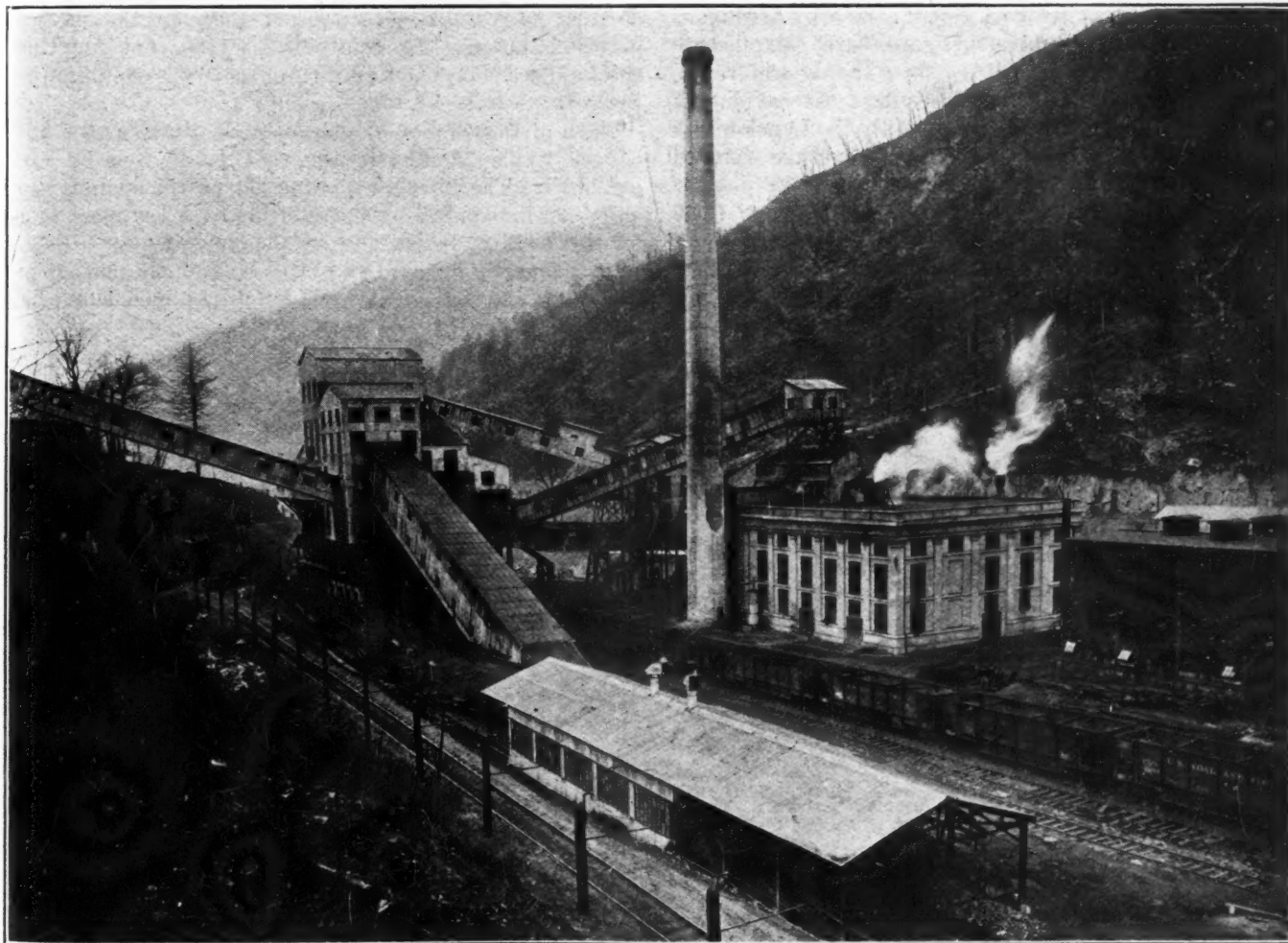
Of the 1,347 men on the payroll that day, 297 were engaged in outside work, and of the latter about 100 men were employed in construction work which will not be going on at all times. Including these men who had no direct part in the mining of coal, the production per man on the payroll is 5 tons; without them it is 5.43 tons.

SOME OF THE SLATE IS DUMPED IN MINE

Altogether there were 1,050 men underground, including 417 company men, 553 coal loaders and 80 machine men. The average output per man underground was 6.45 tons. In the Lynch mines during the month of May for every 4.6 coal loaders one company man was employed in loading slate. For every 4.84 cars of coal dumped on the tippie, one car of slate is hauled to the outside and conveyed to the hillside dump. In addition much slate is gobbled inside the mine. Where so much slate must be handled, the output per man is lowered.

Though the usual number of machine men in 40 crews were working that day, only 239 places were cut. More than twice as many places are cut normally by that number of crews. All the places were cut in a previous shift in the expectation that railroad cars would be received. Some of them were left standing while those loaded out contributed to the coal in storage in the tippie bin and in mine cars.

A more comprehensive study can be made of produc-



SURFACE PLANT AT LYNCH MINES FROM SOUTH SIDE LOOKING WEST

Fortunately, the Lynch Mines have little surface haulage. Just enough is provided to get the coal out of the cars and the empty trip assembled. In the foreground

can be seen one of the two dumphouses which handle the 1,800 mine cars which are brought to them by twenty-five locomotives. The tippie, conveyor sheds, slate conveyors,

junction tower for coal and slate conveyors, power house and machine shop readily can be distinguished. The hills show how the average cover soon becomes 2,500 ft.

TABLE II—TONNAGE AND OUTPUT PER MAN BY SCHEDULES
MAY, 1923

May	Tonnage	Output in Net Tons							
		Per Man On Payroll	Per Company Man	Per Loader	Per Machine Crew	Per Company Man	Per Company Man	Per Company Man	Per Man in Tipples And Dumphouses
1	5,890	4.50	8.35	13.2	151.0	14.00	16.95	83.0	20.60
2	6,099	4.40	8.10	13.8	156.0	13.00	15.90	69.2	21.60
3	6,374	4.45	8.40	13.3	163.5	13.40	16.40	74.2	22.40
4	5,590	3.90	7.55	10.4	140.0	12.20	14.60	73.5	19.75
5	6,280	4.45	8.40	12.5	165.0	13.50	17.10	66.2	22.00
6	Sunday								
7	6,534	4.75	9.10	13.7	159.0	14.90	17.85	92.0	23.00
8	5,794	4.00	7.85	10.7	148.5	12.80	14.95	89.5	20.20
9	6,542	4.55	8.90	12.7	163.5	13.90	16.50	86.0	23.00
10	6,787	4.65	9.10	12.0	169.5	14.70	17.80	85.0	23.50
11	7,089	4.80	9.30	12.8	186.5	14.90	19.20	83.5	24.50
12	6,663	4.65	9.70	12.3	180.0	14.90	18.00	86.8	23.10
13	Sunday								
14	5,379	4.30	7.85	13.0	145.0	13.40	16.80	66.4	18.70
15	6,402	4.75	9.10	13.4	168.5	15.20	17.30	24.0	22.60
16	4,988	3.75	6.85	11.7	135.0	11.25	13.50	66.5	17.50
17	6,561	4.50	8.30	13.5	168.0	14.70	18.40	73.8	23.20
18	6,476	4.65	8.80	13.4	170.0	14.30	16.90	93.7	22.60
19	6,026	4.35	7.80	14.1	162.5	12.40	14.60	81.5	21.20
20	Sunday								
21	5,642	4.15	7.25	13.4	157.0	11.40	13.75	69.0	19.60
22	5,426	3.70	6.70	11.7	146.5	10.50	12.90	73.0	19.00
23	6,559	4.35	7.90	14.0	187.0	12.20	14.50	72.0	22.70
24	6,790	4.55	8.50	13.7	184.0	13.10	15.80	78.0	23.70
25	6,960	4.60	8.60	13.6	178.0	13.50	16.40	75.0	24.20
26	6,352	4.30	7.00	13.7	167.0	12.30	14.80	68.0	22.10
27	Sunday								
28	5,676	4.40	7.80	14.1	145.0	12.80	15.00	88.5	20.10
29	6,231	4.50	8.30	13.8	160.0	13.50	15.50	106.0	21.90
30	5,712	3.95	7.30	12.6	146.0	11.50	13.80	68.8	19.90
31	6,524	4.55	8.20	11.1	174.0	12.90	15.50	75.9	22.50
Average	6,199	4.40	8.10	13.0	162.5	13.40	15.75	80.4	21.70

tion and the labor involved for the month of May of this year. For convenience, figures are compiled in Tables I and II, which furnish a ready reference. During that month of 27 working days the car supply was comparatively good. Consequently the Lynch mines were able to operate steadily at the average rate of 6,200 tons per working day. The maximum output for the mines to date was reached on May 11, when 7,089 tons of coal was mined. The lowest production per day during the month took place on May 16 when it fell to 4,988 tons.

The most notable fact which is revealed by figures

for these two days is that the operator's profit in mining is seriously affected by a fluctuation in car supply. Thus on the day of biggest production 7,089 tons was mined with 1,476 men at the rate of 4.8 tons per man, while on the day of smallest production 4,988 tons was mined by 1,334 men, at the rate of 3.73 tons per man. The difference in the output for these two days was 2,101 tons. Only 33 company men above those required for May 16 were employed on May 11 to produce this surplus tonnage. The production per company man on May 11 was 9.30 tons and on May 16 it was 6.85 tons, which means that the labor of company men cost about 36 per cent more on the latter day than it did on the former.

For the month of May, 2.1 man-hours was required per net ton of coal mined. If the 100 men on each day's payroll who are engaged in work other than that directly bearing on mining are excluded, 1.95 man-hours would have been expended in mining each net ton of coal. These figures may appear high, but one must consider at the same time the conditions which prevail in the Lynch mines, causing difficulty in mining.

OUTPUT PER MAN AVERAGES 4.7 TONS PER SHIFT

The men on the payroll during the month of May have been classified according to their several duties. In Table II is listed for each class the average output per man per shift. Those figures, which are compiled by including the full quota of company men on the surface, are really too low. Including all men on the surface, the average output per man on the payroll per shift during this month is 4.4 tons; not counting the hundred men whose duties do not concern the mining of coal, it is 4.7 tons.

Each of the 43 men employed in the dumphouses and on the tipples handles an average of 145 tons of coal per shift. The ultimate production of 16,000 tons per shift can be handled by the addition of a few more men on the picking tables and in the dumphouses. From this it may be deduced that the greater the output of the tipples the bigger the production per man employed on it.

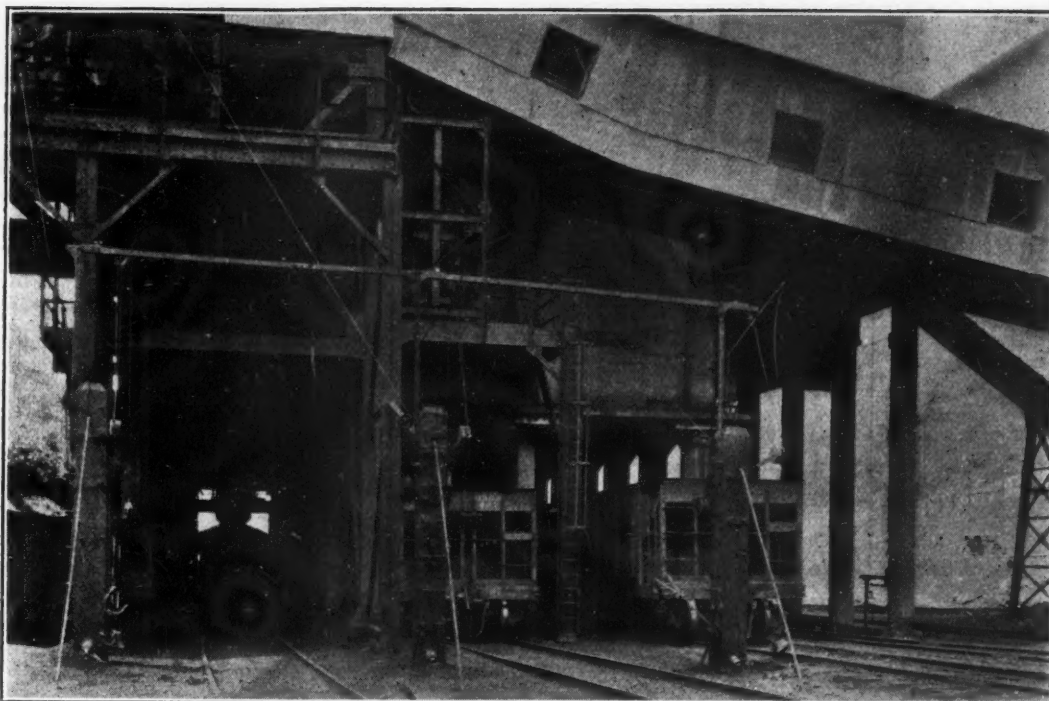
TABLE III—TONNAGE AND POWER CONSUMPTION, ACTUAL AND DEDUCED, MAY, 1923

May	Tonnage	Tipples	Power Consumption in Kilowatt-Hours								Per Ton Of Coal Mined	Derived By Formula*	Percentage Error Of Derived Value
			No. 30 Mine	No. 30 Dumphouses	No. 30 Fan	No. 31 Mine	No. 31 Dumphouse	No. 31 Fan	Shops	Total			
1	5,890	940	9,200	630	2,470	6,000	610	1,840	342	22,032	3.74	3.74	None
2	6,099	1,040	9,800	600	2,360	5,200	590	1,830	351	21,831	3.58	3.60	.05 high
3	6,374	980	9,200	620	2,520	5,200	680	1,800	245	21,245	3.34	3.40	3.6 high
4	5,590	1,090	9,900	680	2,490	5,500	690	1,860	374	22,584	4.02	3.94	2.0 high
5	6,286	960	9,600	650	2,440	5,600	660	1,820	397	22,127	3.52	3.50	.05 low
6	Sunday		3,000		2,290	1,600		1,910	159	8,959			
7	6,534	1,030	8,800	710	2,410	5,100	710	1,880	354	20,994	3.22	3.37	4.7 high
8	5,794	1,030	9,800	680	2,540	5,900	740	1,900	411	23,001	3.97	3.80	4.3 low
9	6,542	1,100	10,100	770	2,350	6,300	760	1,910	399	23,869	3.64	3.37	7.4 high
10	6,787	1,130	9,800	750	2,600	5,900	780	1,950	379	23,289	3.44	3.25	5.5 low
11	7,089	1,090	9,800	790	2,350	5,500	720	1,840	366	22,456	3.16	3.10	1.9 low
12	6,663	1,060	9,500	670	2,440	5,800	700	1,830	337	22,337	3.35	3.30	1.5 low
13	Sunday		3,100		2,510	1,100		1,890	138	8,738			
14	5,379	980	7,900	690	2,460	4,600	630	1,860	289	19,409	3.61	4.09	13.3 high
15	6,402	950	9,500	620	2,360	6,600	630	1,790	314	22,764	3.55	3.44	3.1 low
16	4,988	760	8,500	640	2,430	5,500	550	1,830	315	20,525	4.12	4.41	7.1 high
17	6,561	1,080	9,800	680	2,530	5,600	730	1,900	330	22,650	3.45	3.35	2.9 low
18	6,476	1,080	9,800	670	2,520	5,700	690	1,900	345	22,705	3.51	3.41	2.8 low
19	6,020	970	9,100	630	2,480	5,700	680	1,860	294	21,714	3.60	3.66	1.7 high
20	Sunday		3,100		2,530	13,000		1,920	109	8,959			
21	5,642	980	8,600	660	2,440	4,400	610	1,840	286	19,816	3.51	3.91	11.4 high
22	5,426	990	9,300	660	2,400	5,600	640	1,810	312	21,712	4.00	4.07	1.7 high
23	6,559	990	9,600	650	2,430	6,100	670	1,840	319	22,599	3.45	3.35	2.9 low
24	6,790	730	9,700	670	2,410	5,900	700	1,840	295	22,245	3.27	3.24	.09 low
25	6,960	990	9,700	640	2,590	6,300	730	1,880	319	23,149	3.32	3.16	4.8 low
26	6,352	890	8,800	540	2,460	5,600	500	1,860	299	20,949	3.29	3.46	5.2 high
27	Sunday		3,200		2,540	1,300		1,900	98	9,038			
28	5,676	1,030	7,700	690	2,400	6,200	730	1,790	298	20,838	3.67	3.89	6.0 high
29	6,231	930	10,200	590	2,390	4,600	590	1,800	357	21,457	3.45	3.53	2.3 high
30	5,712	1,150	9,500	720	2,370	5,700	650	1,790	347	22,227	3.89	3.85	1.0 low
31	6,524	1,060	10,100	690	2,480	6,000	720	1,730	334	23,114	3.55	3.38	4.8 low
Total	167,346	27,010	265,700	18,050	76,170	157,400	18,090	57,400	9,512	629,332			

* P = 22,000/T where P = power consumption per ton of coal and T = tonnage per day in period for which P is taken.

Railroad Tracks Under Tipple

Three railroad cars can be loaded on each track—that is, nine in all—at the rate of 500 tons in three minutes; the coal coming from the storage bin. The railroad cars run under the floor of the bin, which is an integral part of the tippie. The unusual posts under the bin, devoid of crossbracing, make travel easy and safe, despite the presence of moving railroad cars.



In Table III is given the power consumption by days for the month of May. The total power consumed in mining and handling the month's production of 167,346 tons is 629,332 kw.-hr., or 3.76 kw.-hr. per ton of coal mined. The total power consumed for mine and town during this period is 779,900 kw.-hr. The ratio between the consumption of power for purposes other than mining and that for mining is as 5 is to 21. From this ratio one perceives how big is the consumption of power in the modern mining community.

A comparison of the consumption of power at Lynch per ton of coal mined with the tonnage for the days in May, as exhibited in Table III, shows that these are algebraically related: that is, the power consumption per ton of coal mined under ordinary operating conditions varies inversely as the tonnage for that day.

Representing the power consumption per ton of coal mined on any day by P and the tonnage for that same day by T then

$$P \text{ varies as } \frac{1}{T} \text{ or } P = k \frac{1}{T} \text{ and } k = PT$$

in which case k is a constant equal to PT . But PT is the total power consumption for any day, so, by averaging the total power consumption for a specific period of days a constant k is obtained, which may be used in calculations for any day in that period.

EMPIRICAL FORMULA GIVES CLOSE RESULTS

The calculated value for constant k for the month of May, excluding Sundays, is 22,000. Then the formula as applied becomes: $P = \frac{22,000}{T}$ in which P is the power consumption for any day in kilowatt-hours and T is the tonnage in net tons.

Using this formula, I have derived for each day in May the power consumption per ton of coal mined. The derived values and also those calculated directly—by dividing the total power consumption for each day by the tonnage for that day—are listed side by side in Table III. A calculation has been made and tabulated showing how little in error is the derived power consumption per ton of coal mined when compared with

the directly calculated value. This error is expressed in a percentage.

The figures show that the relation actually does hold true on average working days. For 20 of the 27 working days the percentage of error of the derived value is less than 5 per cent and in most cases it is less than 3 per cent. For 7 days, however, it is more than 5 per cent. But the calculated values of power consumption per ton of coal mined for these seven days are more or less distorted as compared with the calculated values of power consumption per ton of coal mined on other days on which the tonnage produced approximated the respective tonnages produced for those 7 days.

One may deduce from this peculiarity that operating conditions on those 7 days were such as to cause a consumption of less or more power than would be consumed under average conditions. Nevertheless, the derived and the directly calculated values of power consumption per ton of coal mined are so surprisingly alike for most of the days tested as to hint that the suggested relation has a basis of truth. It is reasonable to expect this relation as the totals of power consumed, see Table III, for all working days are closely alike within limits. The power consumption for May 11 was only about 10 per cent greater than it was for May 16, and yet on the former day the tonnage produced was about 40 per cent greater than the tonnage mined on the latter day.

MAXIMUM PRODUCTION MEANS LOW POWER COSTS

Under existing conditions at Lynch—and those which now exist at any other plant, for that matter—the maintenance of a steady daily output, were it possible, would result in a considerable saving in the cost of power per ton of coal mined. Irregular car supply and a fluctuating demand for coal prevent uniformity in daily tonnage.

If 7,000 tons of coal is mined in the Lynch mines on Monday and only 3,500 tons are mined on Tuesday, the cost of power per ton of coal mined will be twice as great on Tuesday as it would be on Monday. Incidentally, this saving is only one of many which could



THREE OPENINGS TO NO. 31 MINE

One opening is occupied by the 12-ft. fan, which will pass 400,000 cu.ft. of air per minute against a water gage of 3 in. At present it develops only 120,000 cu.ft. of air per minute against a water gage of 1½ in. It is driven by a 100-hp. motor at 120 s.p.m. The small opening is for empty trips, the large for loads.

be made to reduce the cost of coal at the mine should our mines be provided with an opportunity to produce a uniform daily output.

The total capacity of the electric motors at the Lynch mines, for alternating current and direct current, is about 7,000 hp. This figure includes all motors used in mining and handling the coal but does not include those used for town purposes. Correlating horsepower with production, one finds that for an average of 6,200 tons of coal per day there is about 1.15 hp. per ton of average daily output.

For May 11, however, when 7,089 tons of coal was mined, there was only 0.99 hp. per ton of coal mined. With the present capacity of motors a much higher tonnage could be obtained. It is likely that no more than 0.75 hp. per ton of average daily output will be required when the mines are developed to capacity. But as the workings move further into the mountains the figure will be bigger. For the life of the mine a fair figure would be one horsepower per ton of average daily output.

DUMPHOUSES TO HANDLE 18,000 TONS PER SHIFT

Let us turn for a moment to the dumphouses and the tippie which played the important part in the record loading of Feb. 12. Each of the two dumphouses as designed is intended to handle 9,000 tons of coal in a nine-hour shift. The plan calls for two rotary dumps in each dumphouse. That these will be ample to handle 18,000 tons per shift is evidenced by the feat accomplished on Feb. 12. On that day two dumps, one operating in each dumphouse, handled 10,293 tons of coal. Of this quantity, the dump on the side nearest to No. 30 mine, from which most of the production now comes, handled about 6,800 tons of coal. At that rate four dumps will furnish a combined capacity 50 per cent greater at least than the tonnage they were expected to handle.

The most noteworthy and important feature of the equipment in the tippie is the belt conveyors. The success at Lynch of these devices for handling the coal from the mine car to the railroad car and for carrying the mine refuse to the slate dump points the way to their much more extensive use in the future.

Development of their application is only begun and gives promise that they will displace steel-pan conveyors for every purpose except for picking tables. Their life, figured in tons carried and not in years, is sufficiently long to warrant their adoption as an economy. Their ease of repair also commends them for more extensive use.

The normal capacity of the tippie is 2,000 tons of coal per hour. This aggregates 16,000 tons of coal per eight-hour day. The tippie is designed also to handle whatever slate incident to mining must be dumped on the outside. With all the conveyors carrying a capacity load it is estimated that about 18,000 tons of coal and slate combined can be handled in a single shift. The slate conveyors have a capacity greater than 2,000 tons per eight-hour shift, but it is not likely that even that quantity will have to be handled at the tippie in any one period of eight hours.

Of great interest are the mining methods at Lynch by which, considering the youth of the mine, the present unusually large rate of production is derived, and by which in the future the present rate will be nearly trebled. A system which, without jeopardizing plans for future development, will yield 1,242,639 tons of coal in one year, as in 1919, less than two years after ground was broken, holds enhanced possibilities for mammoth yearly production six, eight or ten years hence.

How today's output is attained or how in the future it will be increased threefold is a logical question to ask. It is not so much a question of how the coal is mined as it is what methods are employed to get the coal to the surface. So gigantic a production for one mine—1,000 tons per hour, hauled over one haulage system—has never been achieved in drift or shaft mines. But there is no reason why it cannot be obtained, from a drift mine especially.

Difficulties encountered in shaft mines—such as congestion of trip traffic at the shaft bottom through the impracticability of constructing sufficient storage tracks—have limited the output to a maximum normally of about 6,000 tons per day. Our past methods of hoisting coal to the surface and the size of our mine cars have in many cases restricted production. Had the methods and sizes been revised some of the shaft mines already constructed would have attained a daily output equal to that which some of the new shaft operations are expected to develop. From the latter as much as 10,000 tons of coal per day will be taken, but for that end equipment of greater capacity than that now used has been designed, and with this new machinery will go methods differing in general from those hitherto adopted.

Marked Increase in Germany's Imports Of Coal During Ruhr Blockade

Imports of bituminous coal during the period January to June of this year were 14,720,646 metric tons, according to the German Bureau of Statistics, as compared with 2,102,215 tons in the corresponding period of last year and 5,028,472 tons in the same months of 1913. The tonnage furnished by various countries is shown in the following tabulation:

	1923	1922	1913
Sarre.....	103,624	410,346	
Great Britain.....	7,756,627	1,526,581	4,379,817
Czechoslovakia.....	155,377	78,448	
Poland.....	6,549,641		
Belgium.....			189,173
Holland.....			264,112
All other countries.....	155,377	86,840	195,370
Totals.....	14,720,646	2,102,215	5,028,472

The increase of imports this year compared with last year is due partly to the Ruhr blockade and partly to the loss of the greater part of Upper Silesia. Over 6,200,000 tons was supplied from Upper Silesia, which supply figured last year as domestic production.



Typical Room, Lynch Mines, but Dipping 22 per Cent at Face

Lynch Coal Buried in Places 3,500 Ft. Deep; Methods By Which High Percentage Extraction Is Attained

New Measures Adopted to Hold Heavy Cover and Slate Roof—Every Loader Required to Clean Up His Room Daily—How Mine Is Laid Out—Swags, Hummocks and Loose Slate Afford Many Problems

AT LYNCH, methods of mine layout have been adopted permitting coal to be mined and hauled economically, not for the youthful years only but for the whole life of the mine. Although it has been granted by most mining men that the ideal system of mining, so far as percentage recovery and ease in extraction are concerned, is to drive to the boundary and to remove the coal on the retreat by rooms and pillars or by a system of longwall, that idea has been set aside as impracticable. The chief reason given is that a mine is opened for the immediate present as well as for the future.

However, if that ideal is removed from consideration, equally so is that crude plan whereby two or more independent panels are opened up and these worked in the manner of "catch as catch can." This is no longer tolerable by reason of its wastefulness of our declining coal resources. So far as railroad facilities and the market for coal will permit, uniformity in production should be perpetuated from day to day and from year to year throughout the life of each section. This is the fundamental principle upon which the Lynch system of mining is based.

At the Lynch mines the methods of mining originally adopted have been modified somewhat to cope with conditions which later arose. A general description of the plan of mining adopted in the early stages of operation was given in an article on the "Lynch Plant of the United States Coal & Coke Co.," presented by Howard N. Eavenson to the American Institute of Mining

and Metallurgical Engineers at its Wilkes-Barre meeting, Sept. 12-15, 1921. The article can be found in the issues of *Coal Age* Sept. 22 and 29 and Oct. 6 and 27 of that year, the second section relating specifically to the mine layout. These paragraphs which deal with this subject are repeated here to enable the reader better to note what changes are involved under present methods.

The excerpt reads: "The mines are laid out on a compromise between the advancing robbing system and operation on the retreat. Principal headings are driven so far apart that between them there is room for four rooms end to end. These headings have an empty and a loaded track and two airways and they will be driven up to the boundary without turning a room. They will be flanked by barrier pillars so wide that a full-length room may be driven in the distance across them, but the heading pillars will be left unworked till the boundary is reached, when rooms will be driven into them and the pillars brought back on the retreat. In the drawing these pillars are noted as the barrier section.

"Between two principal headings are, of course, two barrier sections, leaving two other sections each as wide as a room is long. These are used to maintain tonnage till the barrier is reached. Two room headings are driven and each removes what is marked as a room section. The coal from these sections is won entirely on the advance.

"Some of the principal headings will be three miles long. By the system described a uniform output can

be maintained from any section till it is about to be abandoned. Each section will give at least 1,000 tons per day, and five of them are intended to be under development in each mine at the same time, to maintain the desired output and to be ready for a reasonable increase.

"Headings are driven about 12 ft. wide, with ample clearance on each side of the car for safety, and on 60-ft. centers. Airways usually are 18 to 20 ft. wide. Rooms usually are 36 ft. from rib to rib, and their distance, center to center, varies from 80 ft. under light cover to 120 ft. under the main mountain."

ONLY NARROW ROOMS DRIVEN

No longer are the rooms being driven wide. The United States Coal & Coke Co. in its Kentucky mines has abandoned the wide in favor of the narrow room, which generally is driven 14 ft. wide. Though this is not an ironclad rule, it is applied in most instances. The point upon which stress is laid is that each man shall get a whole day's work.

Years ago the company asked the coal loaders how large a place was needed to give them a fair day's labor and then made a careful observation to see what width of room they could load out.

An understanding followed to the effect that a room for one man should be cut wide enough to yield an output of about 20 tons. Any miner with a desire to do so can load this quantity of coal in a single shift under ordinary conditions. The company, moreover, had an additional reason for desiring to give each man a room of the width he could load out and that was the necessity that each man should clean up his face every working day. At its mines at Gary, W. Va., the company has succeeded in accomplishing this end, and at Lynch the daily output per loader is gradually approaching its attainment.

A uniform daily output from a mine and the avoidance of unnatural roof disturbances is dependent upon a methodical advance of working places. At Lynch, in accordance with recognized practice, cutting is done at night. If a place is not cleaned up today, tomorrow it will have to be, and in two days' time it will be one cut behind those working places which will have been cleaned up on both days.

A continuance of this practice will cause work to be suspended in one place and speeded up in another and the shifting of men from place to place, which in itself is not conducive to efficiency. In the Lynch system of mining, a mine section is supposed to yield about 1,000

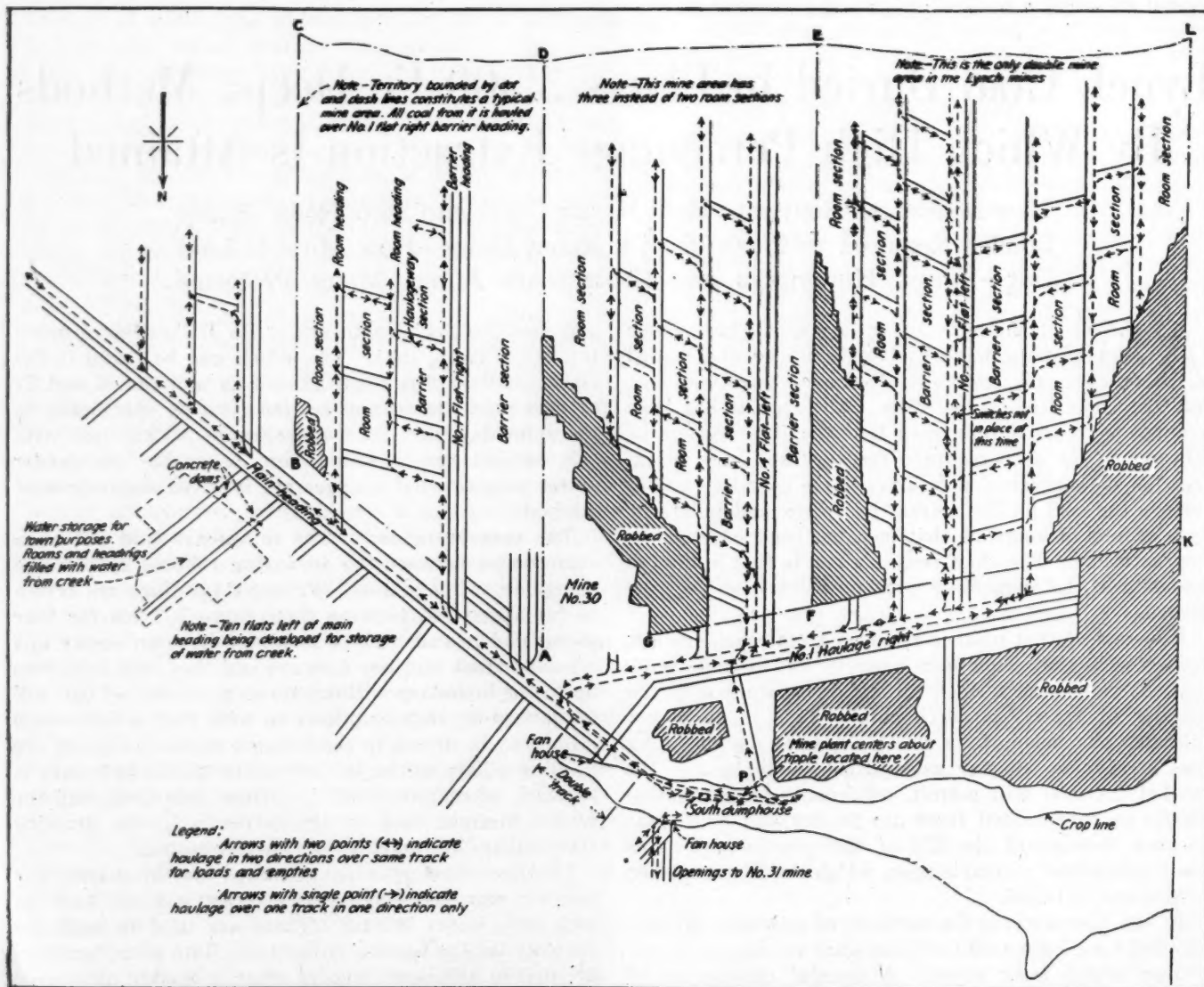


FIG. 1—GRAPHIC ILLUSTRATION OF METHOD OF MINING AND HAULAGE SYSTEM AT LYNCH MINES
 Solid lines represent entries on which track has not been laid or those from which track has been removed on the retreat. Airways also are represented by solid lines. The drawing is not intended to indicate every feature of the mine system. Crosscuts, rooms and pillars are not shown.

FIG. 2

**Digging Down
a Knoll**

Headings used for haulage must be graded to remove the many rolls on the seam. The top must be brushed or the bottom lifted almost everywhere along these headings. In this case 43 in. of bottom is being lifted in No. 6 right off No. 31 main. This is, however, not a particularly bad manifestation of these frequent bumps and sumps which make haulage difficult. Note how the workman is aided in his work by electric lamps.



tons of coal per day. To get this tonnage the section boss must see that all places in his precinct are loaded out.

A 14-ft. room in the 5-ft. seam being worked at this mine will give up seven cars of coal per cut, the total weight of which is about 21 tons. If the thickness of the coal diminishes to 4½ ft. at a point along a room heading, then the room may be made wide enough to yield the full quota.

In the early stages of development in these mines, when the workings were not far under the mountain, a good sandstone roof was encountered which held the weight of the cover above the rooms and headings securely enough to permit of a 36-ft. room. That width was enough to accommodate two or three men, and excellent results were obtained. Later, however, after mining activities were extended into the mountain, the roof changed from sandstone to slate and would not hold up over a wide place unless an excessive quantity of timber was used.

The great weight which the heavy mountain cover brought to bear on the coal was a factor influencing the change to a narrow room. In places the cover has a thickness of 3,500 ft., and the average is scarcely less than 2,500 ft. Thus the narrow room must be used.

There are yet other reasons for the adoption of the narrow room. The cover usually is heavy, greater even than that resting on most of the deep mines of Belgium. It is so heavy that it is advantageous to use it to break the coal in pillar sections. Thereby much difficult and costly machine cutting is eliminated. The narrow room affords a greater concentration of working places than does the big room. By making rooms narrow and pillars wide, the heavy cover will break out the coal, facilitating pick work and making machine cutting in pillars unnecessary. In consequence the more pillar work the better, for the coal is not mined to obtain lumps. More slate must be handled in a given area when the rooms are wide than when they are narrow, for the roof span is longer and the slate is subjected to a greater strain. Moreover, with a wide room more timbers have to be set.

In his article Mr. Eavenson says: "Between two

principal headings are, of course, two barrier sections, leaving two other sections each as wide as a room is long." These latter sections are termed room sections. In speaking of a territory that is mined as a unit, all the coal from which is hauled over one principal heading, I will use the term "mine area." In order that the reader may conceive what constitutes a typical mine area, he is asked to refer to Fig. 1. A four-sided territory inclosed by dot-and-dash lines and marked *ABCD* is pierced by No. 1 flat right off the main heading. It comprises a principal heading flanked by two barrier sections.

MINE AREAS MADE OF DIFFERENT WIDTHS

Though the typical mine area has only two-room sections, three-room sections have been included in several areas for the purpose of dividing the property to better advantage. The results from each are almost equally good, but the smaller mine area has advantages which will be discussed in connection with the haulage system. The area which is designated as *GFEDH* in Fig. 1 has three room sections. It will be noted that a barrier heading was started outby from No. 1 flat right off the main heading and then stopped because of adverse conditions. Consequently that block of coal which should have formed a barrier section to the outside of the barrier heading known as No. 1 flat right became the third room section of the adjoining mine area.

In Fig. 1 a double section is indicated by *FKLE*, consisting of two-room sections on the outby side and three-room sections on the inby side of the barrier or heading known as No. 7 flat left off No. 1 haulage right. This section was laid off in this manner primarily to divide up to better advantage the territory between the main heading and the boundary line on No. 1 haulage right. The territory inby beyond the first mine area of this heading was not large enough to accommodate two mine areas so what should have been the second and third mine areas were combined to form one double area.

The room section of a mine area closest to a barrier section will be termed the first room section and the one beyond it will be called the second room section. As

the two-room sections are completely mined advancing, the rooms in the second room section must be kept in advance of those in the first room section. Rooms are laid out in pairs—that is to say, on one side of the room the pillar is wide and on the other side it is narrow. Those in the second room section are driven alternately on 36- and 64-ft. centers, and those in the first room section are driven on 36- and 90-ft. centers.

STRONGER PILLARS LEFT IN APPROACHING GOAF

The reason for the difference is obvious. Rooms off the second room section of a mine area are stopped (or "butted off," in common mining parlance). Consequently they terminate in a block of solid coal, which aids appreciably in supporting the roof load. Rooms off the first room heading of a mine section are driven through to the goaf of the adjoining room section. The unbroken roof projects as a cantilever over the room pillars of the first room section into the mined-out goaf of the second room section. Therefore, the wide room pillar of the first room section is left wider than the wide room pillar of the second room section.

The 22- and 76-ft. pillars in the first room section and the 22- and 50-ft. pillars in the second room section are equivalent at least numerically to an average width of 42.5 ft. As the width of a room is 14 ft. and the average width of a pillar is 42.5 ft., the ratio of first mining to second mining is as 1 is to 3. This means that 25 per cent of the coal won from rooms is obtained by mining into the solid and 75 per cent is removed by drawing pillars.

Headings in mine areas whether they be for haulage purposes or for ventilation are now driven 12 ft. wide. As first designed the air courses are made wider, but as with the rooms their width was reduced in order that the roof over them might have better support. The air-courses and haulage headings of a room heading are driven on 70-ft. centers, but the four headings which constitute a barrier heading are driven on 60-ft. centers for the reason that they are further supported by the barrier sections on either side.

Rooms are driven so as to make an angle of about 70 deg. with the room heading. In the first room section they are 440 ft. long. Those in the second room section are driven so as to govern their length and to prevent "hogging" beyond that limit into the barrier beyond. Sometimes this butt-off is carried far in advance of the last room driven up to it.

Room pillars are drawn by first driving a pocket 14 ft. wide so as to cut off a wing wide enough to sup-

port the roof safely while further operations are being performed. Consequently the depth of the wing pillar from the pocket to the goaf varies according to the roof load upon it. Usually it is made deeper on a narrow pillar than on a wide pillar. A room pillar is brought back about 40 ft. before the adjacent one on the advance side is started.

When the first room pillar of a room section is brought back and to the heading, 18 rooms are being pillared back and 10 rooms are being driven up. Thus a typical mine area of two-room sections will furnish about 56 working places in rooms and 8 in the headings which are being advanced.

A group of sixty-four working places is supposed to yield 1,000 tons of coal or more each working day. A place 14 ft. wide, undercut $7\frac{1}{2}$ ft. in the 5-ft. seam being worked, will yield, as stated, 21 tons per place. A heading 12 ft. wide yields less than that, but the shortcomings of a working place in a heading so far as its yield per cut is concerned is balanced by the fact that more than 21 tons per working place is obtained when drawing pillars.

USUALLY OBTAIN MORE THAN 1,000 TONS PER DAY

For convenience one may assume that each working place theoretically yields 21 tons. If development in the headings is worked double shift, as is customary, no more than 48 cuts in 40 places would have to be loaded out. This gives elasticity to the average tonnage required from each working place and as a result more than 1,000 tons per day usually is obtained.

At this rate not all places have to be worked to produce the necessary tonnage for the area or if the average tonnage per place drops below this mark the basic tonnage for the mine area can still be maintained by working more than 42 places. Thus with all places in a mine area working, to produce 1,000 tons per day each place need yield only 13.9 tons.

By referring to Table II in the preceding article, the reader will discover that the average tonnage per loader per shift during the month of May, 1923, is 13.05 tons. In spite of the fact that much development work is being done and much rock has to be handled in some mine areas, the absolute average tonnage per man per shift required theoretically to produce 1,000 tons is almost obtained in actual practice.

Division of labor is not carried as far at Lynch as it is in some mines, as for instance in many of the coke region mines. It has been said that company men should be employed to prepare the coal at the face



FIG. 3

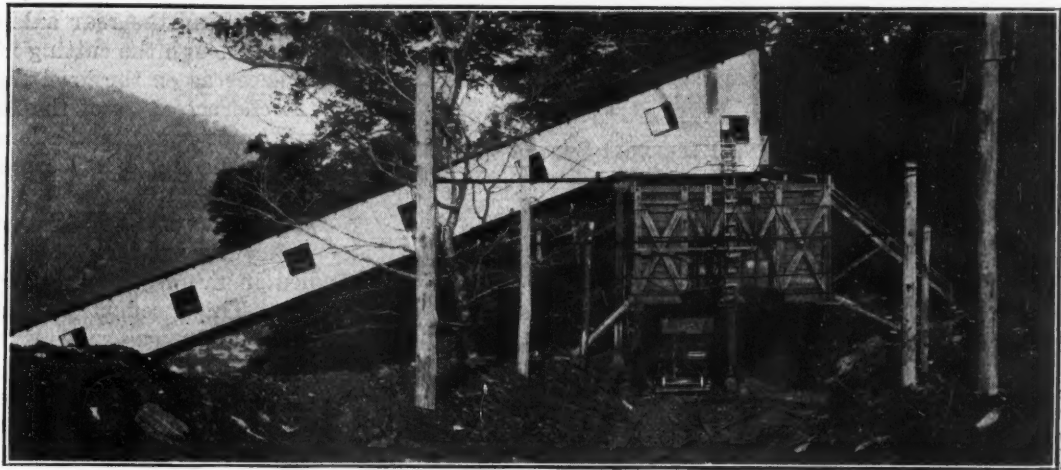
Driving a Pocket

Pockets, or cross cuts, are driven near the end of a pillar for removing the coal adjacent to the goaf. Note the excellent cap pieces and on the left the electric-light wire. Rails are laid only temporarily as in a few days the place is closed in.

FIG. 4

Filling Slate Larry

Slate is disposed of by conveying it to a storage bin on a belt conveyor 686 ft. long which rises 209 ft. above the tippie. Two refuse stacking cars carry the slate to the point where it is dumped on the mountainside.



for the loader, so that the latter will have no other duties to perform other than to load out his coal, square up his place and remove whatever slate near the face is in danger of falling. This company believes that a too intricate division of labor is not economical.

For instance, let us suppose that men are employed to drill the shotholes in the various working places in a given section of a mine. If an electric coal drill is used the time required to drill three holes is not more than five minutes. In most cases it is less. But the time required for the driller to move from one working place to another on an average is greater than five minutes.

The interval between actual working periods would be about ten minutes, which means that two-thirds of the driller's time is wasted in getting from place to place. But because of the recital of these facts it should not be supposed that the company discourages the use of the electric coal drills; it merely believes that more of them should be placed in the mines and so distributed as to be at the disposal of more men.

The initial cost of such drills is not high; in fact it is so low that by dispensing with the services of one driller for a period of one year enough could be saved to pay for as many electric coal drills as would be required, at the rate of one for every two working places, in the section otherwise looked after by one driller.

THINK LOADER SHOULD DRILL OWN SHOTHOLES

It is the belief of the management that the coal loader should drill his own shotholes, using either a hand auger or an electric coal drill. He also should lay his own track, a job that will take about fifteen minutes each day. The two operations along with the loading of coal are continuous, and no time is lost in needless travel. With but few exceptions loaders will quit work for the day as soon as they have loaded out one cut, even though they have completed it by noon. They feel that they have done a fair day's work and are satisfied with their day's earnings; consequently they leave the mine. A period of 30 to 45 minutes consumed in drilling shotholes and in laying track added to their time for loading coal is not an imposition upon them as some of it can be done while the loader is waiting for cars and the compensation is such as to remunerate them for this extra work.

Under heavy cover mine workings usually are dry if the strata are not broken. Underground circulation of water normally is downward but in mountains it is not likely to reach far from the surface vertically or far inward horizontally. Openings in the rocks are small because of the great weight of the cover and not con-

tinuous, so they do not form passages for the flow of water. Consequently even if water is present it is not likely to be flowing.

As a rule the workings are quite dry, for little water finds its way into the Lynch mines through the strata or otherwise. Some water gathers in a few confined swamps by filtration through those parts of the cover which are not thick. In such cases it is drained into the seam below, which is now being developed to provide drainage ways. Thence it is drained by gravity to the outside.

The rarity of blowouts of cable in the underground transmission system is indicative of the dry condition of most parts of the mine and the excellent drainage wherever water is encountered. Fiber conduits incased in concrete alongside and below the level of the track of main headings carry 16,000 ft. of alternating-current cables; about 4,000 ft. more is being laid and there is a certainty that the system will be 10 to 12 miles long when its maximum extension is reached. This phrase of the operation will be dealt with in an article later.

Big Looney Creek lies below the seam along that part of its course over the property which lies west of the drift openings; but to the east, in the direction of its headwaters, the stream lies above the body of coal. In that direction for some distance the cover between the stream and the coal is not thick. Fortunately, the acreage of coal which might in mining be affected by the close proximity of the stream is not large. The coal which lies under the stream and between the stream and the main heading of No. 30 mine as far as the heading has been extended cannot be mined extensively at the present time. A break caused by subsidence, were the coal to be mined out, would empty the stream into the mine workings.

However, some headings and rooms have been driven that do allow some of this water to enter. The water thus admitted is impounded by dams within the mines and furnishes a water supply for town purposes. Although pure it is, of course, treated before being used. The workings are driven northeast from the main heading, which runs practically with the creek, as shown in the map accompanying this article. To this end, five left flats have been driven from the main heading and five more are being driven.

Concrete dams are built 260 ft. from the main heading in what were the haulage roads and air courses comprising each left flat. These dams are put down to solid bottom and are extended 2 ft. into the roof and 9 ft. into both ribs. The thickness of the dams is 6 ft. at the bottom tapering to 4 ft. at the top. They

are poured with a rich mix to make them watertight and troweled to a smooth finish on the outside. For the core of the dams the rock aggregate is 3 in. and for the finish it is $\frac{1}{4}$ to $\frac{1}{2}$ in.

WATER IN UNDERGROUND RESERVOIR SERVES TOWN

An estimate of the capacity of this underground reservoir is 35,000,000 gallons. With the added capacity of the rooms and headings now being driven for the purpose, facilities for the storage of water will be sufficient to furnish a generous water supply for the town during the dry seasons when the creek dwindles from the torrent that it is in the spring of the year to the size of a brook.

At Gary, W. Va., where the company operates its other mines, the grade of the stream in its vicinity falls with the dip of the synclinal. Thus the stream bed is partly or entirely emptied of its water, depending upon the season, and flows in the openings in the strata instead of staying on the surface.

As a result ground waters are abundant, and holes drilled for water seldom are dry. At Lynch the reverse is true for the fall of the stream and the dip of the rock formations point in opposite directions. Consequently the supply of water from wells is small.

Underground storage of water is the only possible solution of the problem at the present time. A dam upstream is impracticable in that it would be a menace to the town and plant below.

Many difficulties are met in the Lynch mines. However, these are overcome so well—naturally at an increased expenditure for labor—that production does not suffer on their account. Most of them are caused by rolls in the coal which makes necessary much brushing of roof and taking up of bottom on entries that are used for haulage. Fortunately, from the crests and troughs of the waves in the seam the coal falls or rises again to a base level.

The coal may fall in a dip of 30 per cent for a distance of 100 ft., then extend across a level table for 100 ft. more, only to rise again to the base level. As a rule the rolls are not so pronounced, yet the undulation of the seam is persistent enough to add greatly to the labors of mining. Notwithstanding this, the main haulage roads in the mines are graded almost everywhere to $1\frac{1}{2}$ per cent or less in favor of the loads. The grades in room entries cannot be eased enough to permit of haulage by gathering locomotives. In consequence, mules and ponies must be used. Where the grades are too steep even for animals, hoists are used for hauling coal from the faces to the necks of rooms.

WORKING AROUND SINKS AND RISES IN HEADINGS

Sometimes where room headings dip or rise excessively and have to be filled or excavated accordingly, a so-called "monkey breakthrough" is driven 80 ft. from and parallel with the heading so as to connect in coal the two rooms on either end of the fold. Rooms are worked from the monkey breakthrough, and the pillar between it and the heading is recovered by splitting it and drawing both wings on the retreat.

In some places, as in 30-G section of No. 30 mine, the shortwall mining machines are lowered down a dip by attaching a hoist rope and retarding its passage with the brake on the hoist and with that on the cutting machine also. In loading or unloading a machine from its truck on a rise or dip, frequently an extra machine jack must be fastened from the roof to the bottom in

front or behind the rear axle of the truck, as the case may be. Though the cutting machine will cut as well in these places as on the level there is no way of predicting the characteristic of the bottom under the next cut. In a distance equal to the length of the cutter bar of the machine a dip in the coal may change to a rise, or vice versa.

A study was made by the company in both mines to determine the quantity of slate that would have to be handled in mining a basic production of 120,474 tons of coal. This production was chosen because at the time the study was made it represented the average output per month of 26 days. Actual measurements of the thickness of coal and slate that had to be handled in advancing the faces were made in each room, air-course, pillar and heading. The average thickness of coal derived was 57.57 in. and that of the slate was 8.13 in.

As 1 cu.yd. of coal in the solid weighs 2,160 lb., to produce 120,474 tons of coal, 111,550 cu.yd. of solid coal would have to be mined. The thickness of the slate that would have to be handled in advancing the faces would be one-eighth that of the coal and consequently 15,755 cu.yd. of slate in the solid likewise would have to be handled in advancing the faces. This slate would fill 11,820 mine cars, figuring that 1 cu.yd. of slate in the solid is the equivalent of 2 cu.yd. of loose slate and that the volumetric capacity of the Lynch mine car is $2\frac{3}{4}$ cu.yd.

But after the faces were advanced, 18 per cent of the original quantity of slate additional would have to be handled and this would be sufficient to fill 2,066 mine cars. The total quantity of slate that would have to be handled would fill 13,886 mine cars. Slate from all mines which would have to be hauled to the tippie would fill 8,598 mine cars.

WEIGHT OF SLATE LOADED HALF THAT OF COAL

As the capacity of the mine car is 3 tons, the basic production of 120,474 tons would require the handling of 40,158 mine cars of coal. This means that for every 4.84 mine cars of coal one car of slate would have to be transported to the tippie and dumped. The specific gravity of the coal is 1.28, that of the slate is 2.80, consequently by weight little more than twice as much coal as slate is handled over the tippie. In the face of this big difficulty in mining, the average outputs per loader, per underground man and per man on the payroll are indeed high. These figures were given in the previous article.

Most of the slate that would have to be transported to the outside would come from haulage entries. In No. 30 mine that chargeable to haulage extension would be 2,355 cars and in No. 31 mine it would be 3,645 cars. To the former would be allocated a basic production of 79,374 tons of coal and to the latter 41,000 tons. In extending the haulage roads in No. 31 mine three times as much slate would be transported to the surface per ton of coal mined during the extension as for No. 30 mine. Incidentally twice as much coal would be mined during that period in No. 30 mine as in No. 31 mine. It may be noted that the rate of drilling by compressed air in slate and sandstone for grading haulage roads is 1 ft. in six minutes.

IF FRANCE WILL ONLY WAIT a little while the German offers will be offers to accept an indemnity.—*New York Tribune*.

Underground Transmission with Substations Designed To Keep Voltage Drop Low in Lynch Mines

A Mine Power Plant—How the Load Varies Throughout the Day—Supplying the Town With Lights and Power—Underground Distribution System in the Mines.

A MODERN power plant and an efficient system of electrification and power distribution are prerequisites of mining on a scale as large as that at the Lynch mine, a giant in the group of bituminous mines which are classed as big producers. The need for a modern power plant is redoubled in this case because the mine is isolated and out of range of central-station custom power, which otherwise might be depended upon to provide standby energy should the generating equipment be crippled at the mine. Under any circumstances it is always highly desirable that an efficient system of electrification be planned before a mine is opened up. The system should be flexible so as to permit additions and changes required in each stage of the development of the mine.

In many mines the electrification plan provides for the use of direct current only, which is not desirable from the standpoint of efficiency; nor is it favorable for extensions as the mining faces move further from the source of power.

Underground transforming and converting substations, supplemented by ample copper to feed the lines from which the power is drawn, will remedy the power troubles that vex the mine superintendent who relies solely upon direct current for his electrical energy. An adequate number of substations properly located with respect to the loads help to maintain excellent voltage in direct-current lines, thus making the system at the Lynch mine comparable to modern methods employed in a metropolitan central-station distribution system or

an electric-railway layout in a large, heavy-traffic city.

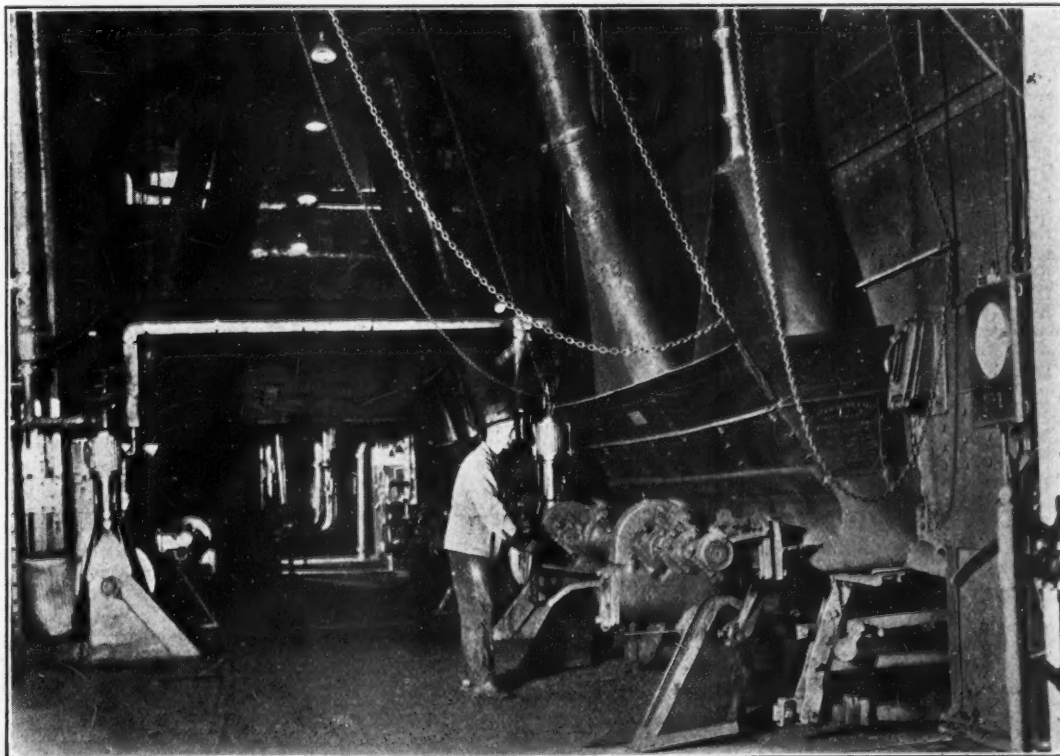
All particulars of the power plant at Lynch will not be recounted here for the reason that a general description has already appeared in these pages—see *Coal Age*, pages 453 and 454 in the issue of Sept. 22, 1921. In this article those details will be emphasized which deal with a few problems of installation, operation and maintenance of the power plant and the transmission system.

At the Lynch mines, steam at a pressure of 200 lb. and 100 deg. superheat is furnished by three 750-hp. Stirling water-tube boilers to two turbo-generators each rated at 1,875-kva. capacity, 6,600 volts, 3 phase, 60 cycles, and to the auxiliary steam equipment. The usual practice is to run two boilers at a time, holding one as a spare. The idle period of the latter affords an opportunity to make necessary repairs on it. In the course of a year all three boilers will have given about the same service, which is sufficient to necessitate a relining of each of the boiler furnaces once every ten months.

Peak loads on the plant now vary from 60 to 75 per cent of the normal rating of the two generators. It will not be long, however, until these peaks will approach the normal capacity of the generating equipment, at which time a third unit, for which space has been provided, will be installed. Though two of the boilers are sufficient to care for all the steam equipment at present, the three boilers now installed would not suffice for the addition of a third turbo-generator so also

Most Modern Boiler Room

Three Stirling water-tube boilers of 750-hp. capacity are fired by under-feed stokers. There is space for a fourth unit. Only two boilers are fired at one time. When the load on these boilers becomes too heavy to be carried by natural draft, a fuel economizer starts the forced draft; in fact, whatever equipment was deemed necessary to carry the plant load efficiently has been installed. Note the steam flowmeter on the right.



another boiler will be added. The necessity for excess boiler capacity at isolated plants which cannot be assisted from an outside source is obvious.

The boilers are carried at an average of 150 per cent rating for a period of 24 hours when a vacuum of 26.5 in. in the condensers can be maintained. Very seldom do they run at or below normal rating. During the day, from 6:30 a.m. until 4 p.m., they are fired to generate steam to the extent of 200 per cent of rating, while for the remaining hours of the day the load drops to 110 per cent of rating. During the latter period, when the load is light, one turbo-generator is idle. Whenever natural draft is insufficient to keep the boiler pressure at 200 lb., forced draft is started to maintain the plant efficiency as high as possible. Feed water comes from the water main of the town and requires no special treatment for boiler purposes.

Some difficulty has been encountered during the hot season of the year in maintaining a vacuum of 26.5 in.

The air washer consists of a centrifugal pump which forces water through spray jets to wash down the dust in the washing chamber. The air is forced against baffle plates which take out the moisture.

An interesting study was furnished by the chart of the kilowatt recorder taken at the plant on Aug. 11 for a period of twenty-four hours, tying in outside operations with those of underground and interpreting them accordingly. At midnight when the chart was started, the load varied but little from an average of 1,000 kw. until 2:30 a.m.; then it dropped off suddenly to a load slightly in excess of 800 kw., which was maintained until 5:30 a.m. The droop in the curve at 2:30 a.m. is natural. Coal cutters finish their cutting about this time, several locomotives used for hauling supplies, etc., are no longer running continuously and the machine shop, which is operated in two shifts, is closed at this hour. Street lighting, fans, pumps and other mine equipment constitute the load at this time.

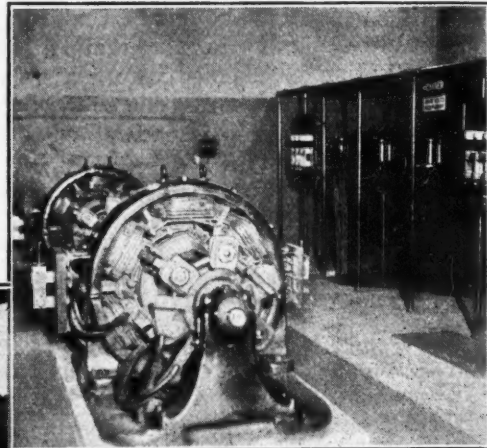
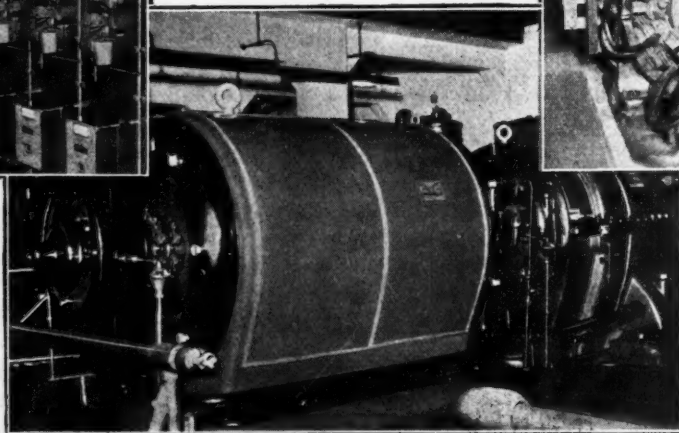


**Power House
Switchboard**

The switchboard depicted above is located on the same level as the turbo-generators and is provided with complete control and metering equipment for each circuit.

**1,875-kva. Turbo-
Generator**

For the day load when the mines are working the two generators are operated; during the night and on Sundays one is sufficient to carry the load.



An Inside Substation

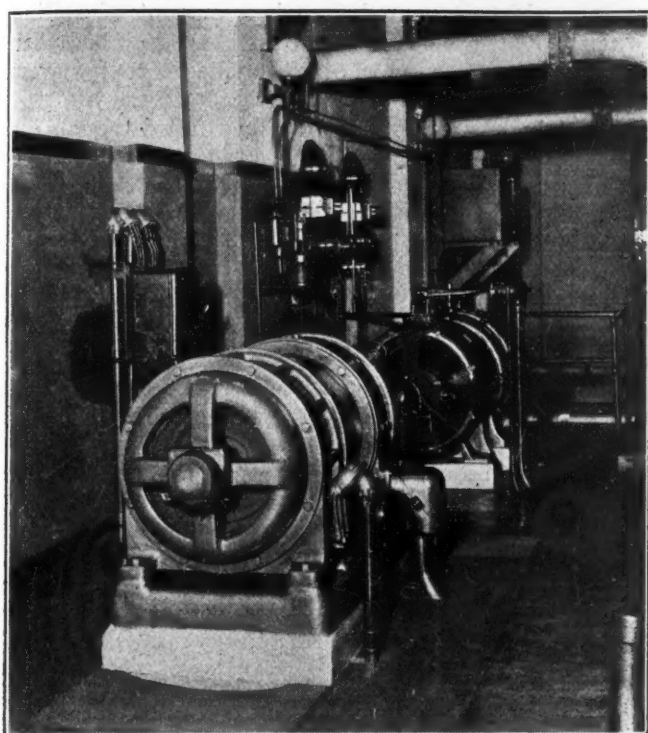
Each substation as shown above is housed in a concrete room near the load center. This arrangement makes possible proper voltage on all the feeder and trolley lines.

on the condensers. The water supply for condensing comes from the Big Looney Creek, which becomes low during the dry season. A spray pond which it was thought would adequately care for the needs of the power plant during low-water periods does not cool the water sufficiently for efficient condensing. Consequently a cooling tower is now being completed that will eliminate this trouble.

The air used for cooling the electric end of the turbo-generators is passed through an air washer. This is a particularly necessary precaution where the power plant is so close to the tippie. With a tippie of the size found at Lynch some coal dust is suspended in the air and finds its way into the generating equipment unless it is first removed. If the air were not washed, the capacity and efficiency of the generator would be reduced by a reduction in area of the air ducts and thus cause a rise in the temperature of the windings. Coal dust in the generator might be ignited by the slightest spark. With a generator revolving at 3,600 r.p.m. the rotor would coast for about twenty minutes after shutting off steam, with the result that in case of a fire in the generator it would be ruined before the fire could be extinguished.

From 5:30 to 6:30 a.m. the load hovered around 900 kw. Consequently one would surmise that the domestic load from the 998 houses inhabited by a population of 7,100 to be 100 kw. during this morning hour in which households prepare for the day. At 6:30 a.m. the load jumped to about 1,600 kw., which approximately was the integrated load for the day shift. The peak for the day was about 2,100 kw. At 4 p.m. the tippie stopped, though the operation of the mines continued and the load fell to 1,100 kw. The drop of 500 kw. from the average, however, cannot be attributed to the tippie alone. The mine locomotives begin to clean up their trips at about 3:30 p.m. and there is a gradual reduction of the load from this source until 5 p.m. It can be reasonably said that the tippie load is about 250 kw., including, of course, that power which is consumed in the two dumphouses. As the night shift came on and the machine runners began to cut their places the load rose to 1,300 kw., but gradually fell back again to about 1,100 kw. at midnight.

There are two individual 6,600-volt outgoing circuits from the power house for town use. One circuit supplies current for the houses only. The other circuit supplies



EXCITERS FOR TURBO-GENERATORS

current for business houses, the hospital, the office, schools, etc. The domestic and the business circuit are metered separately.

Outgoing lines from the power house pass through horn-gap switches on the hillside to transmission lines going to the upper and lower ends of the town. This precaution insures service to either end of the town in the event of trouble on the opposite end. Landslides, cold weather and lightning in mountainous districts are ever likely to cause trouble. Branch lines from the main transmission lines are stepped down to 110-220 volts. Branch lines and transformers are of a capacity and so distributed as to take care of individual sections of the town.

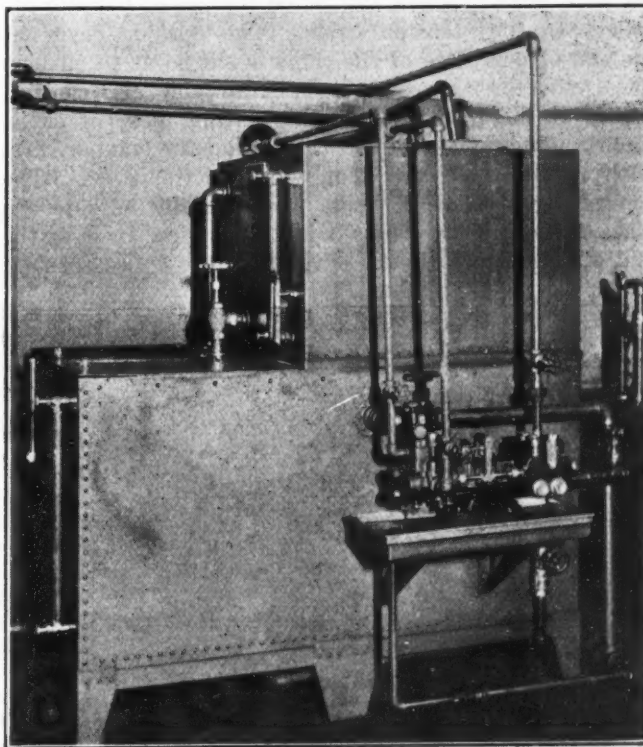
Three distribution circuits are used for the transmission of power from the power plant to the mines. All high-voltage transmission lines except those for town use are placed in underground conduits made of concrete. Each of the two mines has an individual circuit and so also has the electrically driven machinery on the surface. The last-mentioned circuit feeds the tippie, dumphouse, mine fans and shops, and on each tap from this circuit a separate meter is provided. The consumption of power in each mine also is metered separately. This arrangement distributes the cost of power in proportion to the amount used by each of the several phases of operation.

The circuit which feeds outside mine equipment is stepped down to 440 volts through five 200-kva. transformers located in the power plant. A bank of three of these transformers is connected in closed delta to feed the tippie, dumphouses and shops while the remaining two transformers are in open delta for the fans. The bus bars of each of these two banks of transformers may be interconnected through an oil switch so that in case of a breakdown to either set of transformers the fans may be operated. In that event, however, the tippie load would have to be decreased so as not to overload the working set of transformers—this arrangement has not yet been necessary. Con-

tinuous running of the fans is more important than tippie operation. The load on the tippie could be decreased by running one side and then the other alternately. A further reduction in the consumption of power in the tippie during such an emergency can be obtained by cutting out the grizzly screens and in the dumphouses by passing mine cars of slate through the dumps without dumping. This slate could be dumped at night.

From the busbars and oil switches the current is carried by a three-conductor braided rubber-covered cable of 000 wire to the floor and thence outside in metal conduits; there the wires enter 4-in. fiber conduit pipes of the drive-joint type which are embedded below the surface in concrete so that at least 3 in. of material protects the conduit pipe in any direction. In this manner the high-tension cables are extended to the substations in the mines, following the shortest paths possible, which are along the main haulage roads where they are placed below the level of the roadbed and near the rib on the trolley-wire side of the haulage entry. Wherever the mine track passes over the conduits, as, for instance, at a turnout, it is supported by extra heavy steel ties to prevent fracturing of the concrete.

At intervals of 500 ft., manholes fitted with covers provide facilities for laying the cable and furnish access for making repairs. The distance between manholes is made 500 ft. because the cable usually comes in 500-ft. lengths. Cables of this size in 1,000-ft. lengths are too heavy and bulky for handling underground. The reel upon which such a length is wound is so big as to be cumbersome and consequently could not be taken into the mines very easily. Moreover, it would be next to impossible to pull this cable through the conduit from manhole to manhole at intervals of 1,000 ft. Either the pull line might break or the insula-



OIL FILTER FOR LUBRICANT USED ON TURBO-GENERATORS

For efficient operation of the generators lubricating oil must be kept clean. Oil filters are indispensable in the power plant at the mine just as much as they are indispensable in the large central station.

tion might be injured. Even in pulling a 500-ft. length through a conduit the pull line broke on two occasions.

The pull line generally used is a $\frac{1}{4}$ -in. stranded wire rope of steel. As the conduits are laid, an auxiliary pull line of No. 12 galvanized iron wire is first put through from one manhole to the next. This preparatory precaution is taken because it was soon found that much trouble is met in pushing a small wire through the conduit for distances greater than 200 ft.

By resorting to the method described neither cable nor conduit is in any way injured. This is important, for if the conduit were injured a leak would develop, as a result of which water probably would flow into the conduit and cause the cable to break down.

As a precaution all joints of the fiber conduit pipes are dipped in tar before being driven together. Also great care is taken in laying the pipes and in placing the protective covering of concrete to insure a straight level or uniformly graded line between manholes and thus eliminate damage due to water which would follow at those points where water might collect in the conduit. Wherever there is a suspicion that a given section of the conduit is punctured, a piece of brattice cloth saturated with hot tar is wrapped around the concrete at the point where the leak is believed to exist. Leaks in manholes are stopped off with concrete and painted with tar on the inside. In rare instances a manhole is inundated and then a portable pump is utilized to remove the water. Manholes on the outside between the power plant and the mine openings are provided with drain pipes which lead to the creek.

Naturally in every manhole the cable is spliced. The commonly used splice was tried but did not give satisfactory service. The method of the telephone companies, whereby individual wires are dipped in paraffin to waterproof the insulation along the entire length of the wire and at splices, suggested the use of paraffin for splices in high-tension cable. The outside cover at the end of one piece of the cable is slit so as to envelop the conductors exposed in splicing and also several inches of the insulation on the mating piece of cable. Each conductor is taped in the customary manner, first with rubber tape and then with friction tape. The separating strands of hemp are carefully adjusted in place at the splice. The slit in the outside cover at the end of one piece of cable enveloping the splice forms a

cup into which is poured a copious amount of boiling paraffin. The envelope is then closed and encircled with friction tape, after which the outside is coated with paraffin.

Not a single splice of this kind has failed though the cables have been extended a lineal length of 15,000 ft. and many of these are known to have been submerged in water for periods of many hours without leaking.

The high-tension cable is laid under the floor of the substations and led to the busbars in metal conduits. From busbars and oil switches the alternating current is stepped down through banks of three transformers, each transformer having a capacity of 75 kva., to 103 and 206 volts. Synchronous converters, each with a capacity of 200 kw., are used to generate direct current at 275 volts.

Each mine has two substations, averaging $1\frac{1}{2}$ miles apart. In each mine the innermost substation is equipped with only one converter whereas the outermost substation has two. In the substation equipped with two



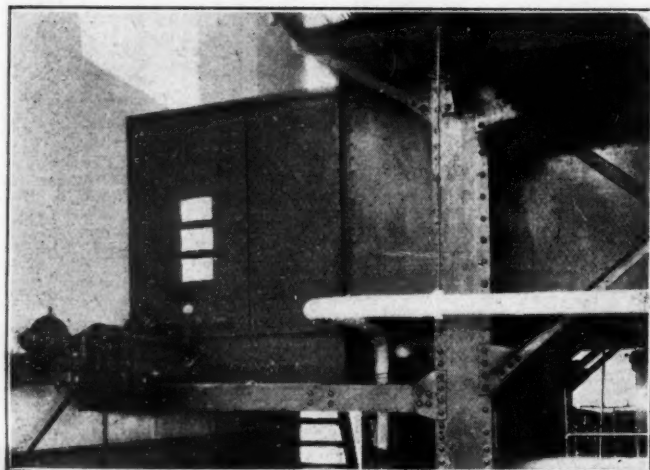
MANHOLE FOR ACCESS TO HIGH-TENSION CONDUIT

The manholes must be made waterproof as well as the conduit which stretches between them. A splice of the cable can be seen. The cover consists of $\frac{1}{4}$ -in. steel plate.

converters—generally termed No. 1—connection is made from the A.C. busbars through current transformers to three oil switches, two for the two converters in this substation and one for the single converter in No. 2 substation. In case of trouble in No. 1 substation the oil switches which control the current to converters in No. 1 substation are tripped open and No. 2 substation is unaffected. Of course the two substations are connected in parallel on the direct-current end to equalize the load between the two substations.

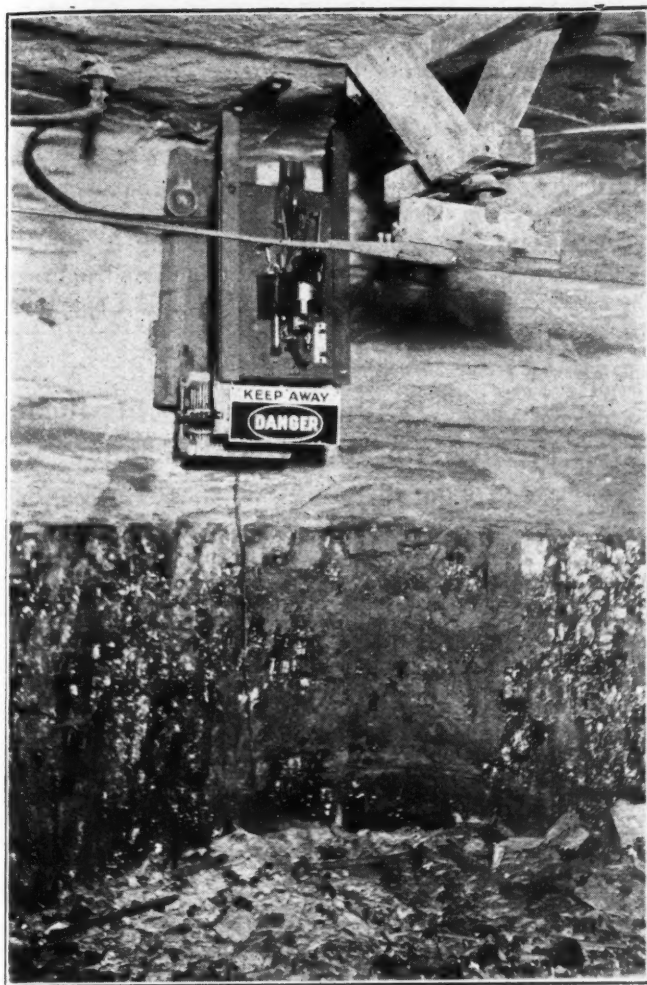
No. 2 substation in No. 30 mine is temporary. A new substation to take the place of the temporary substation is being built 5,000 ft. inby from the latter. This will make an interval of two miles between the two permanent substations in this mine. Housed by the same walls as those that form the substation will be a mine foreman's office and an underground restaurant. The latter is an innovation in mines and will be equipped with an electric range on which hot lunches will be prepared.

Feeders of 1,000,000-circ.mil. cross-section are carried from the substations along the main haulage roads of the mine. From them run 500,000 cir.mil. feeders along the main haulage road in each mine section. All feed cables are carried on the same hangers that hold the trolley wire. This arrangement is advantageous



AIR WHICH COOLS GENERATORS WASHED WITH WATER

Equally as important as the filtering of the lubricant is the washing of the air which cools the generators. The air washer is located directly below the gallery on which the turbo-generators are set.



AUTOMATIC RECLOSING CIRCUIT BREAKER IN
NO. 31 MINE

This breaker is located at No. 1 flat right off No. 31 main taking care of an electrical section in which are included three adjoining flats to the right of the main heading. The breaker is set for 700 amp., that in the substation is set at 1,200 amp. A short in this section will not affect any other section; and when the short is removed the breaker will close automatically.

for several reasons: A feeder is not likely to be cut in two by a derailed locomotive or by a wreck of mine cars as would be the case were it hung from the rib; it is safer being up with the trolley wire and it simplifies the task of suspending it as one hanger serves for both feeder and trolley wire.

Strain insulators are placed on the feeders at intervals of 500 ft. Jumpers from feeders to trolley wire are spaced on 200-ft. centers to insure a minimum voltage drop when locomotives in a given section are taking a full load. Localized heating of the trolley wire, with subsequent elongation which causes it to drop, is prevented.

MINIMUM OF LINE LOSSES ASSURED

In these mines high-tension alternating-current distribution in underground conduits at 6,600 volts to all underground substations insures a minimum of line losses. Because large feeders are along all main haulageways it is rare to have a voltage drop of more than 15 volts at any face in any section at the present stage of development in both mines. It is the intention of the company never to have a drop of more than 75 volts; even when the workings are moved far under the mountains, more substations and feeders will be added to maintain a high direct-current voltage at all places.

Damp Carbide from Acetylene Lamp Ignites Coal Dust Warmed by Sun

BY ROYCE L. GRIMES

Electrical Engineer, Cleveland, Ohio

EVERYONE engaged in the mining industry knows that carbide generates great heat when it is dampened, but few indeed have suspected that it could attain such a temperature as to ignite dust from the average grade of soft coal.

Recently I passed by one of the tipples of a mining company located in Jefferson County, Ohio, and noticed that smoke was escaping from a pile of dust that had accumulated under the screens. It was during the noon hour, and the place was deserted except for the foreman of the tipple, the weighmaster and myself, so we proceeded to extinguish the flames. Upon examination of the dust as it was shoveled into the open we discovered small fragments of carbide, and upon further inquiry we were informed that an employee from the inside of the mine had passed this platform and emptied the contents of his lamp only about five minutes prior to my discovery of the fire. This we conceived to be a possible clue to the source of the fire, and I gathered a quantity of dust that was unburned and delivered it to the laboratory.

The analysis was as follows: Volatile matter, 36.81 per cent; carbon, 52.03; ash, 11.16; the sulphur percentage was 2.10 and the heat of complete combustion 14,500 B.t.u.

A quantity was placed in a suitable test tube and a fragment of damp carbide added. The tube then was sealed, but no apparent action took place other than the formation of gas from the carbide. A second quantity was prepared in a similar manner except that it was preheated to about 122 deg. F., which is about the temperature to which the dust upon the tipple was exposed for the rays of a summer sun at midday were beating upon it. To this warm coal a fragment of damp carbide was added. This test resulted in ignition within 4.5 seconds.

The tests that followed were many and varied but we learned through a series of experiments that from 4.5 seconds to approximately 40 minutes might be required to ignite this dust, the time depending upon temperature, quantity of dust and carbide, the atmosphere and other conditions. I hope to gather more data pertaining to this matter. Until more is discovered, however, it is well to keep in mind the possibility that loss of life, destruction of property and loss of employment may result from the careless disposal of used or partly used carbide.

Railroad Coal Consumption Up in July

Class 1 railroads of the United States consumed 8,315,000 net tons of coal during July, 1923, as charged to account 394, compared with 8,296,000 tons in the preceding month and 6,597,000 in July, 1922, according to a report by the Bureau of Statistics of the Interstate Commerce Commission covering 176 steam roads. During the first seven months of 1923 these roads consumed 65,226,000 tons as compared with 51,736,000 tons in the corresponding period of 1922. The delivered cost per ton in June last was \$3.37; in July, 1922, it was \$4.32.

Consumption of fuel oil during July was 160,270,000 gallons, compared with 151,732,000 gallons in June and 120,809,000 gallons in July, 1922. The totals for the first seven months of 1923 and 1922 were 1,056,972,000 and 833,926,000 gallons respectively.

New Equipment

Two-Piece Chain That Does Not Buckle Or Come Apart in Service

A NEW two-piece chain suitable for elevators, conveyors, concrete mixers, stokers, ash conveyors, portable loaders and power transmission in general, suitable for operation on any standard sprocket from 1 in. pitch up, developed and placed on the market by the Anthracite Chain Co., Hazleton, Pa., is now being applied extensively at the coal mines.

This type of chain has no loose pins, the center links and pins being made up of one forging. This arrange-

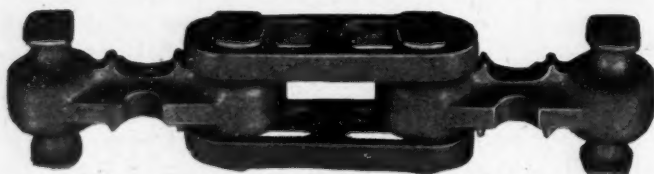


FIG. 1—CHAIN ASSEMBLED

Reducing the number of parts and still maintaining the serviceability and strength of the chain is a very important consideration in chain design. This chain seems to have all the desirable features and none of the objectionable features which are always troublesome.

ment reinforces the bearing surface of the pins and side links and also increases the diameter of the pins.

The development of this chain has been the result of a need for a stronger and more efficient chain with fewer parts than most of the earlier chains that were developed for service around the mine. The parts are made from high carbon steel drop forged and the chain is now made in pitches from 3 in. light to 9 in. heavy. This embraces eight different sizes.

Fig. 1 shows the chain assembled. It will be noted that the pins fit the side links in a way that forms a semi-ball and socket joint. This prevents side play, eliminating any possibility of climbing the sprocket. The ends of the center links that come in contact with the sprocket teeth are extra heavy to retain the pitch of the chain.

Fig. 2 illustrates how the chain is assembled. When in service only one-half of the pitch is required for slack

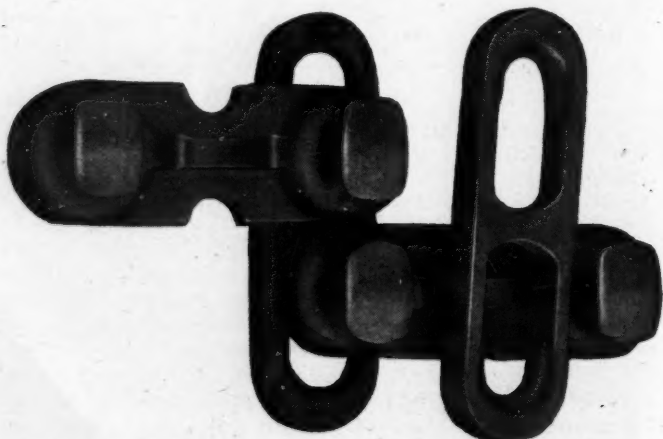


FIG. 2—HOW CHAIN IS ASSEMBLED

These links can be taken apart instantly without removing attachments, yet it is impossible for the chain to buckle or come apart in service.

to take the chain apart. Where it is necessary to reverse or back up the line, the stops and the back of the pins come in contact with the extreme ends of the side links and prevent back lash.

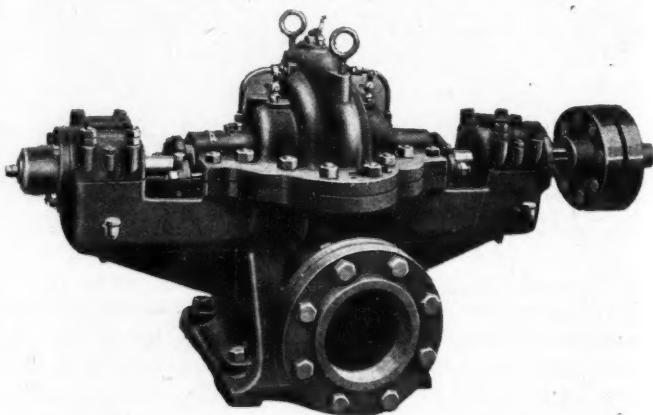
The attachments for the flights, carriers or buckets are made of certified malleable iron parts which grip the center link and are interchangeable with standard flights. The attachment bolt passes through the half circle in the center link thus preventing any slippage.

This chain has already been examined and approved by the Industrial Board of the Pennsylvania Department of Labor and Industry.

Single-Stage Double-Suction Centrifugal Pump Maintains High Efficiency

AFTER a careful survey of the latest technical data available, embodying a study of the practice of all manufacturers of centrifugal pumps both in this country and abroad, the Goulds Manufacturing Co., of Seneca Falls, N. Y., has developed a new line of single-stage double-suction centrifugal pumps. The main features of these new pumps are mechanical durability and maintained high efficiency.

The impeller is of the double-suction inclosed type. For bronze fitted pumps removable bronze shaft sleeves are provided to protect the shaft from wear and corrosion. The casing is horizontally split, making it possible for the pump to be opened for inspection without disconnecting either the suction or discharge piping.



NEW TYPE SINGLE-STAGE DOUBLE-SUCTION CENTRIFUGAL PUMP

Heavy construction, low maintenance, long life and maintained high efficiency, features always interesting to the mine manager, are claimed for this equipment.

The bearing housing is cast integral with the casing, which insures permanent alignment. Deep stuffing boxes fitted with split glands with swing bolts are furnished. The bearings are made of removable split ring oiling shells in a split housing. Any end thrust is taken up by a double-acting ball thrust bearing in oil bath.

The construction of the pump as a whole is substantial in every detail, the pump casing in particular being suitable for heavy suction pressures as high as 100 lb. Suitable bases can be made for mounting the pump as a unit in conjunction with an electric motor, steam turbine, gasoline engine or belt drive.

The various sizes available will make this type of pump popular for use in the mines and outside the mines wherever water must be handled in large or small quantities.



Problems of Operating Men

Edited by
James T. Beard



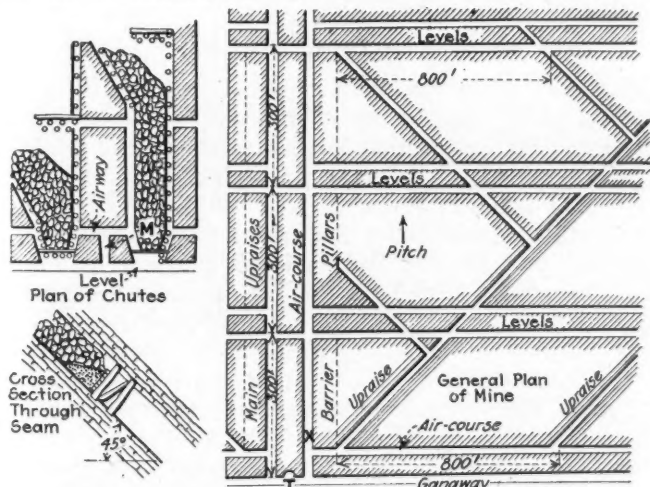
Working Two Coal Seams on Steep Pitches

Seams Reached by Cross-Tunnel—Gangways and Levels to Right and Left of Main Upraises—Slant Roads Pitching 35 Deg. Provide Conveyor System

HAVING had some experience in mining pitching seams, my attention was attracted by the inquiry of L. L. Travis, Ophir, Utah, *Coal Age*, June 7, p. 942, asking for the best method of working two steeply pitching seams, separated by 125 ft. of strata and having an inclination of 45 deg., approximately.

Assuming that the only way of approaching the seam is by driving the proposed tunnel from the hanging-wall side, and that the line of the tunnel is located near the center of the property, I would adopt a plan of development similar to one that I will try to describe.

Where the tunnel cuts the upper seam, marked *T* in the accompanying figure, I would start and drive



SHOWING GENERAL PLAN AND DETAIL SECTION

a pair of upraises on the full pitch of the seam, extending these openings to the surface. This work should be rushed so as to provide an adequate air-course for the further development of the mine. The two openings should be driven on centers determined by the depth of cover and other conditions relating to the nature of the roof, floor and coal.

Mr. Travis states that he contemplates the probable total extraction of one of the seams before developing the other. Let me suggest that the development of the second seam should commence when the output of the first has reached its peak. The total production from the property would thus be maintained more uniform, and the development of the second seam would probably be more easily financed.

If this suggestion is adopted and an air-course driven to the surface on the second seam, a drift can then

be driven from one of the main upraises on the first seam to the air-course of the second seam, as indicated at *X* in the general plan on the right of the figure. This would provide means of properly ventilating the first seam, when the barrier pillars of the upper air-course are being extracted.

The correspondent's suggestion of driving levels each way to the property lines, and upraises every 800 ft. is good and, as the editor has remarked, "cannot be improved." Then driving levels every 300 ft. from the main upraises will divide the whole property into blocks or panels 300x800 ft. in area. The upraises, however, must be driven in such a direction so as to give a maximum inclination of 35 deg. and enable the use of retarding conveyors.

ROOM-AND-PILLAR WORK, RETREATING PLAN

When the property has been developed to the crop and boundary lines the final operation of robbing back is commenced, for which a modified form of longwall retreating has been suggested. My fear is, however, that such a plan would prove a costly experiment in this case. Instead, allow me to suggest the room-and-pillar method of extraction, in retreating.

The rooms should be driven on the full pitch of the seam. The width of both rooms and pillars must be determined by the depth of cover and other conditions that characterize the seam. The room chutes should be kept full, until the room has reached its limit of 300 ft. The coal in the chute is then lowered enough to enable the miner to angle into the adjoining pillar as shown on the left of the figure. The angle will be determined by the nature of the roof strata overlying the seam.

As each slice of pillar is extracted and the coal lowered ready for another slice of pillar, a bulkhead (a cross-section, of which is shown in the lower left-hand of the figure) is built to protect the chute below. These bulkheads, cushioned with slack, as indicated in the figure, prove very effective in comparatively low seams, as we may class the two seams, in this instance.

The bottom slice of pillar may be cleaned out by building a loading chute in the manway *M*, between two adjoining rooms. The method of robbing the entry stumps would be the usual method, familiar to miners, in pitching seams. By this method a good percentage of extraction may be obtained. Manway lumber can be easily recovered, and if good bulkheads are built at the proper time, most of the props can be recovered.

TRANSPORTATION OF COAL

The inclination of 45 deg., in this case, insures the gravitation of the coal down the pitch and the only problem is its transportation along the levels. I would suggest utilizing the energy generated on the pitch to transport the coal along the levels. One of the leading manufacturers of conveyors states, "Retarding con-

veyors operating on inclinations above 26 deg. will generate power"; and, again, we are advised that "an inclination of 35 deg. is the maximum inclination for retarding conveyors."

Retarding conveyors can therefore be installed in the slant upraises, their number depending on the production of the mine. Each conveyor should be made in sections, so that when the level has retreated to the conveyor upraise a section can be taken out and installed in the level below. The coal from the higher level must then be taken to the next conveyor on the outbye side.

CONVEYOR SYSTEM GENERATES POWER

In order to utilize the power generated by the conveyors I would suggest coupling each conveyor to a small dynamo. Since the periods of generating will be intermittent, the current must be transmitted to accumulators, and there, in turn, tapped by feed lines, to transmit the power to where it may be needed.

On the levels, the coal is conveyed from the room chutes, in bottom-dump cars, and dumped into chutes feeding the conveyors.

For transporting the coal along the levels in as simple a manner as possible, hand tramming not being efficient, I would employ an electrically operated endless-rope system, provided the mine is non-gaseous; or compressed air can be used if the mine is gaseous.

Superior, Colo.

CYMRO.

Flooding of Mine Prevented by Changing Course of Creek

Door at foot of slope good for use in emergency—Permanent benefit obtained by changing the course of the creek—Instance cited.

REFERRING to the inquiry of Joseph Magdalena, which appears in *Coal Age*, Aug. 23, p. 291, and describes the trouble he has experienced with the flooding of his mine during the wet season, or at the time of a Spring freshet, kindly permit me to offer a suggestion that may be of service in his case, particularly if the mine underlies a creek bottom, as has been my own experience.

The suggestion he offers of building a strong iron door at the foot of the slope, on finding that the concrete wall and arch with which he lined the slope failed to keep the water out, is undoubtedly a good plan for use in an emergency. There are reasons, however, why something else should be done that will afford greater relief, by not interrupting the mining of coal during times when the door would have to be closed.

For this reason, I would look for some other means of keeping the water from running into the mine. It is possible, as I have already suggested, that this mine underlies a creek bottom; and, in that case, the accumulation of surface water in that area and the possible overflowing of the creek will make it difficult to keep the water from flowing into the mine through cracks and crevices in the overlying strata.

On this assumption, allow me to suggest as a remedy changing the course of the creek, should that be possible, so as to avoid its traversing the section immediately above the mine workings. This was done, in one instance I recall, and there was no further trouble from that source during the working of the mine. When the place was finally abandoned the creek was turned back into its old course.

It may happen that much benefit will be derived by building a levee to divert the course of the water, and lining the creek bottom with a good layer of concrete. It may be necessary to widen the bed of the creek to prevent overflowing the banks during a freshet.

Loogootee, Ind.

JACOB RILEY.

Official Responsibility for Mine Explosions

Improved mining laws not the most urgent factor in reducing the number of mine explosions—Enforcement of existing laws of still greater importance.

THE terribly fatal mine explosion at Kemmerer, Wyo., which occurred Aug. 14, a brief account of which is given in *Coal Age*, Aug. 23, p. 296, again calls attention to the question of doing what we can to reduce the number of these dread disasters. The Kemmerer explosion exacted a toll of 99 lives and would seem to have been preventable by more careful supervision.

I am reminded of an excellent article that appeared in *Coal Age*, some time since (Vol. 23, p. 302), in which my friend, C. W. Atkins, asked the question, "In what respect can our state mining laws be improved?" His letter impressed me, at the time, as being one of the best that have been written on this subject.

While there is no doubt in my mind but that our mining laws can be improved in many respects, I am convinced that that is not the most important factor in reference to reducing the number of explosions in the mines. One point that occurs to me just now is that clause, in Art. 4, Sec. 1, of the Bituminous Mining law of Pennsylvania, which makes the mine foreman, in the words of the law, "subject to the supervision and control of the operator."

OPERATOR MUST CONTROL HIS OWN PROPERTY

Without doubt an operator should rightfully be in control of the mine, which is his property, to the extent of employing a competent foreman whom he can trust to take charge of its operation in respect to safety. On the other hand, however, the man so placed in charge and made responsible for the safe conduct of operations underground must be free to follow his own judgment and experience, since he is the one in closest touch with conditions affecting the safety and lives of the men in his charge.

To divide this grave responsibility in respect to safety, between the foreman in charge underground and the operator or superintendent on the surface, is to my mind one of the mistakes in our present laws. In this and a few other respects, our laws can doubtless be improved; but I wish to draw attention to a still more important factor in the preventing of explosions in our mines.

We all know and realize that what improvements have already been made in our mining laws have proved to be a great benefit in reducing the number of mine accidents, wherever these laws have been enforced by the mine officials in charge. None of us can say, however, how much greater would have been the benefit derived from this source had these laws been enforced more universally and there had been greater co-operation in that respect between all mine officials in charge of operations above and below ground.

As illustrating this point, I recall an instance that occurred when I was working in a mine so gaseous that no open lights were permitted in the drift mouth. However, so lax were the restrictions placed on the under-

ground operations, in that mine, that the miners charged and fired their own shots. To cap the climax, the fire-bosses employed in the mine had their attention called, by the management, to the fact that they were reporting too much gas.

Actions of this kind or of a similar nature are more often the underlying causes of explosions in mines than may be generally imagined. That is my reason for urging, as a truth to be recognized, that the strict enforcement of existing laws now on our statute books is of greater importance than the framing of new laws if we would reduce to a minimum the liability to gas and dust explosions in the mines.

It may seem unreasonably drastic to suggest that an extreme penalty, similar to the penalties attached to

the taking of life by assault and battery, be exacted of mine officials holding responsible positions when the failure on the part of such an official results in the loss of life to mine workers entrusted to their care. It is my belief, however, that such drastic penalties would have a wonderful effect in changing the attitude of many higher officials, in reference to the safety of their employees.

One word more in closing. It is my belief that mine explosions can be almost wholly eliminated through the honest and hearty co-operation of all mine officials, in seeing that the mine is operated in strict compliance with the requirements of the mining law. If mine officials cannot stamp out this evil, let me ask, Who can?

Mayport, Pa.

JAMES THOMPSON.

Inquiries Of General Interest

Reducing Resistance to Flow of Air in Fan Shaft

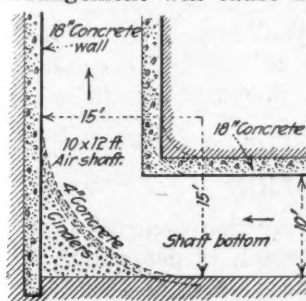
Obstruction Offered by Sharp Bends in Air-Course Not to Be Disregarded—Estimate of the Percentage of Loss on This Account

WE ARE about completing a new air shaft for the better ventilation of our mine. The fan to be installed is a double-inlet, reversible fan of the turbine type, 7 ft. in diameter and 4 ft. wide. At a speed of, approximately, 320 r.p.m., this fan is guaranteed to produce 200,000 cu.ft. of air per minute, against a total water gage of 4 in. The fan will be operated as an exhaust fan.

The fan shaft, which is 10x12 ft. in section, has been lined with an 18-in. concrete wall, extending from the bottom to the top of the shaft. About 15 ft. below the surface, a quicksand formation was encountered; and it was thought best to strengthen the concrete lining of the shaft, at this point, by the use of seven 40-lb. steel rails. These were placed across the shaft, four rails across the width and three across the length of the shaft, spacing them about equal distances apart.

In regard to these rails, the question has arisen, in the minds of some of our officials, as to whether this arrangement will cause an eddy and obstruct the flow of the air passing up the shaft. On this point, I should be glad to have the opinion of *Coal Age*.

Also, both our engineers and the maker of the fan advise me that a considerable gain in the efficiency of the ventilating system would be secured by rounding the airway or passage at the foot of the shaft, in



the manner shown in the accompanying sketch. This would conduct the air current in a continuous curve, instead of causing it to abut sharply against the con-

crete wall at the bottom of the shaft, as it must do unless this change is made. I want to ask, will the striking of the air current against the concrete wall, in the present arrangement, cause any appreciable eddy or disturbance of the air passing up the shaft?

Blairsville, Pa.

MANAGER.

In answer to the first question asked by this correspondent, regarding the obstruction offered by the rails placed across the shaft about 15 ft. below the surface, as he has described, there is no cause for worry on this account. Estimating on a maximum air current of 200,000 cu.ft. per min., the velocity of the air is not excessive, being only 1,650 ft. per min. Even allowing for the reduction of the area of the shaft by the presence of the rails, the velocity of the air would be increased to 2,000 ft. per min. for an inappreciable distance only. If the rails are equally spaced in the shaft, there will be little or no eddy in the air current at this point.

ESTIMATING LOSS DUE TO SHARP BENDS

In regard to rounding the air passage at the foot of the shaft, however, a very considerable benefit will be derived by so doing, if this is done in a workman-like manner. In replying to a previous inquiry regarding the resistance offered by sharp bends in an air-course, *Coal Age*, July 19, p. 111, reference was made to the investigation of this subject, by the Engineering Department of the University of Illinois co-operating with the Federal Bureau of Mines. The investigation showed that a sharp turn of 90 deg., or a right-angle deflection in an air-course, caused a theoretical loss in pressure equal to twice the velocity head of the current, whereas the same deflection, through a gradual curve, gave no appreciable loss.

Estimating on this basis and assuming an air current of 200,000 cu.ft. per min., passing in a 10x12-ft. airway or shaft, causing a velocity of, say 27.78 ft. per sec., the velocity head, expressed in inches of water gage, is $0.0144(27.78^2 \div 64.32) = 0.173$ in. Then, if the loss due to a square 90-deg. turn in the air-course is twice this velocity head, it would cause an increase of water gage of $2 \times 0.173 = 0.346$ or, say $\frac{1}{3}$ in.

Finally, estimating on a 4-in. water gage developed in the fan drift, the right-angle turn, at the foot of this upcast shaft, represents a loss of one-twelfth, or $8\frac{1}{3}$ per cent, making the power available for the circulation of air in the mine about $91\frac{1}{3}$ per cent of that indicated by the reading of the gage in the fan drift. This result is seldom appreciated in practical mine ventilation.

Examination Questions Answered

First-Class Foremen's Examination, Birmingham, Ala., July 23, 1923

(Selected Questions)

QUESTION—Which would you prefer in building airtight or fireproof stoppings; stone, brick, concrete, or hollow tile? Explain fully, stating the cheapest.

ANSWER—Each kind of material mentioned is fireproof and can be made airtight if carefully built as a mine stopping. The choice of material may depend, to some extent, on conditions in the mine in regard to the economy of construction. For example, a mine may furnish a large quantity of good rock for building stoppings, which if not so used would have to be stowed away as refuse or sent out of the mine. In that case, it would be economy to build good rock stoppings. In the absence of rock, however, the choice will generally lie between concrete and brick; and the former will most commonly be chosen, because of its general utility for the purpose. Hollow tile, unless of a form specially adapted for use in the mine, will seldom possess the required strength to withstand the roof pressure, particularly where there is any liability to squeeze, although the work of building stoppings with either hollow tile or brick may be more easily performed than when rock or concrete is employed.

QUESTION—Why should an up-to-date blueprint copy of the mine map always be on hand in the mine foreman's office; and what ready information will this furnish?

ANSWER—An up-to-date blueprint copy of the mine map will show, at a glance, the relation of different sections of the mine, and enable the foreman to plan the work intelligently. Constant reference to the map will avoid the habit of many mine foremen, who are prone to assume that their familiarity with the mine enables them to judge correctly of the direction and distance of driving certain rooms and entries. Mistakes made in this way often result in the loss of much coal that can never be recovered. Again, in case of accident in the mine, when rescue teams and helpers come from other mines and districts, an accurate mine map is invaluable in directing the rescue work that follows.

QUESTION—A water gage reads $2\frac{1}{2}$ in., on a door 5×7 ft.; what is the total pressure on the door? Show by example.

ANSWER—A water-gage reading of $2\frac{1}{2}$ in. corresponds to a pressure of $2\frac{1}{2} \times 5.2 = 13$ lb. per sq.ft. The area of the door is $5 \times 7 = 35$ sq.ft., which makes the total pressure, in this case, $13 \times 35 = 455$ lb.

QUESTION—What degree or percentage of pitch forms the most ideal condition for chutes?

ANSWER—The answer to this question will depend largely on the character of the floor of the seam and the nature of the coal, as these factors determine the ease with which the coal will slide down the chute. In general, however, it may be stated that where the inclination of the seam is less than 30 deg., it will be necessary to line the floor of the chute with sheet iron,

to enable the coal to slide freely. Coal that is hard and dry will slide easily over a sheet-iron floor, until the inclination gets as low as 15 deg. When the inclination reaches 30 deg., there is generally no trouble experienced in the sliding of the coal.

QUESTION—Which would you prefer, an airway 6×12 ft. or one 8×9 ft., in section? Give reasons.

ANSWER—Since both of these cross-sections show an area of 72 sq.ft., the one having the shortest perimeter, which is the 8×9 -ft. airway, will have the least amount of rubbing surface, for the same length of air-course. This airway will, therefore, present less resistance to the passage of the air current, other things being equal, and is the section to be preferred, as far as ventilation is concerned. There may be other considerations, however, that would alter this choice.

QUESTION—The velocity of an air current is 578 ft. per min. In an airway 6 ft. 8 in. high and 7 ft. 6 in. wide; what quantity of air is passing per minute? Show the calculation.

ANSWER—The sectional area of this airway is $6\frac{2}{3} \times 7\frac{1}{2} = 50$ sq.ft. Assuming the given velocity is an average for the entire section of the airway, the quantity of air passing is $50 \times 578 = 28,900$ cu.ft. per min.

QUESTION—In a ditch 18 in. wide and 12 in. deep, the velocity of the water is 5 ft. per min. How many gallons of water will pass in one hour? Show example.

ANSWER—The sectional area of this ditch is $12 \times 18 = 216$ sq.in. or 1.5 sq.ft. Then, assuming an average velocity of 5 ft. or 60 in. per min., the quantity of water flowing in this ditch, in one hour, is $(60 \times 60 \times 216) \div 231 = 3,366$ gal.

QUESTION—What percentage of stone dust would you recommend to render coal dust non-explosive?

ANSWER—Experiments by the Federal Bureau of Mines, on the fine dust of Pittsburgh coal have shown that a mixture containing 60 per cent of fine shale dust (free from combustible matter) or 60 per cent of limestone dust, prevented the ignition of the mixed dust, by a blowout shot. On the other hand, it was found that 75 per cent of either of these kinds of dust was required to prevent the propagation of an explosion that was once started. It is evident that very much depends on the inflammability of the coal, the fineness of the coal dust and whether or not the stone dust contains any appreciable combustible matter.

QUESTION—Where should stone-dust barriers be placed in a mine, assuming all entries working?

ANSWER—What is known as the "box barrier," in stone dusting, is a frail box filled with fine stone dust that will be blown into the air when the box containing it is broken by the force of the blast or concussion of the air, preceding the flame of the explosion. These box barriers are placed at the entrance of all splits in the mine and at intervals of 1,000 ft. or more, on all entries where coal dust is found in quantities that may prove dangerous.

CORRECTION

Attention is called to an error that occurred in finding the angle whose cosine is 0.1, in determining the bearing of a slant road having a grade of 10 per cent, in a seam whose inclination is 45 deg., *Coal Age*, Aug. 30, p. 328. The required angle whose tangent is 0.1 is $84^{\circ}15'$, instead of $89^{\circ}25'$, and the required bearing of the slant road N $84^{\circ}15'$ E, the road making an angle of $5^{\circ}45'$ with the strike of the seam.

56,000,000 Tons of Soft Coal in Storage Piles Sept. 1; Exceeded Only Twice in Last Seven Years

Consumers of soft coal continued to add to their storage piles during August and on Sept. 1, 1923, they had on hand approximately 56,000,000 net tons, according to a survey by the Bureau of the Census and the Geological Survey, under authority of the Federal Fuel Distributor. This estimate takes no account of the coal in the cellars of householders, concerning which no statistics are available, nor steamship fuel, nor coal on the Lake docks, which item is classed as coal in transit. The passing of August, 1923, brought to a close a year of practically uninterrupted accumulation of stocks, and the stock-taking as of Sept. 1 revealed many interesting and important facts: Stocks on that date were 4,000,000 tons larger than on Aug. 1, 1923; 7,500,000 tons larger than on Nov. 1, 1921, and nearly 300 per cent larger than on Sept. 1, 1922; the course of stocks has been constantly upward during the past 12 months, except during February; during the 7 years for which records of stocks exist, the present supply has been exceeded only during the periods at the close of the war and just prior to the miners' strike of 1922.

Measured in terms of tons, stocks increased 7.7 per cent in August. Measured in terms of days' supply, the increase was 4.5 per cent. The smaller increase in days' supply is accounted for by the fact that the rate of coal consumption increased in August, thereby shortening the time that the available tonnage would last. At the rate of consumption during August the stocks on Sept. 1 were sufficient to last 46 days on the average, against a 44 days' supply on Aug. 1, at the rate of consumption in July. These averages are based on the assumption that the supply was evenly distributed.

In addition to the quantity estimated as being in the storage piles of actual consumers, the following quantities are known to have been in transit on Sept. 1: On the docks of Lakes Superior and Michigan, 6,400,000 tons; in

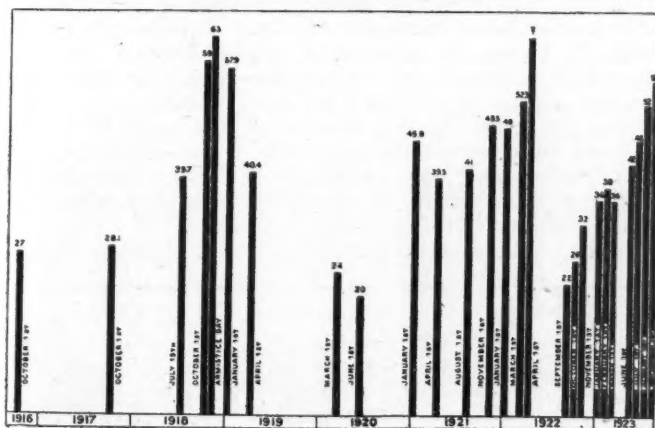


FIG. 1—TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL, OCT. 1, 1916, TO SEPT. 1, 1923

Figures represent million net tons and include coal in the hands of railroads, industrial consumers, public utilities, and retail dealers. Coal for steamship fuel, on Lake docks, in transit, and in the bins of householders is not included.

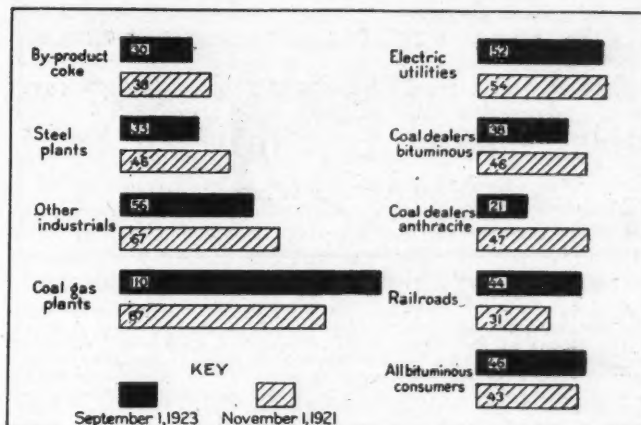


FIG. 2—DAYS' SUPPLY HELD BY DIFFERENT CLASSES OF CONSUMERS, SEPT. 1, 1923, AND NOV. 1, 1921

At the rate soft coal was burned in August, 1923, the total stocks on Sept. 1 were sufficient to last 46 days, an increase of 2 days over the supply on Aug. 1. The stocks on Nov. 1, 1921, were sufficient to last 43 days at the low rate of consumption then prevailing. Consumption in August was larger than in July, 1923, and further changes in the rate of consumption will be reflected in the days' supply.

storage at the mines, 440,000 tons; in cars awaiting dumping at lower Lake Erie ports, 625,000 tons.

The information shown graphically in Fig. 1 indicates that never before in the period over which reports on stocks extend, have consumers been so well supplied at this season of the year, except in the fall of 1918. The supply on Sept. 1, 1923, however, was more adequate than that on Armistice Day, because the present rate of consumption is less than during the latter part of 1918.

Estimates based on the reports from consumers and supplemented by information from other sources, indicate a total consumption in August of approximately 43,000,000 tons, or at the rate of about 9,700,000 tons per 7-day week.

Fig. 2, which is based upon the data in the table below, compares the days' supply held by the 7 principal classes of consumers on Sept. 1, 1923, with that on Nov. 1, 1921. In comparing figures of stocks on those dates two facts should be remembered; first, that while the actual tons of coal held by many of the consumers on Nov. 1, 1921, was much less than on Sept. 1, 1923, the days' supply on the earlier date was the larger, owing to the greatly reduced rate of consumption then prevailing, and second, that the two dates do not exactly correspond. A supply that had appeared amply sufficient to fill all needs on Sept. 1 might not be at all adequate two months later in the season. The average stocks on Sept. 1 were sufficient to last 46 days at the rate of consumption in August, against 44 days' supply on Aug. 1, 1923, 43 days on Nov. 1, 1921, and 42 days on Jan. 1, 1919, at the rates of consumption prevailing on those dates. Any appreciable change in the consumption rate in September will be reflected in the days' supply.

These statistics, shown by classes of consumers in Fig. 2

DAYS' SUPPLY OF BITUMINOUS COAL IN HANDS OF VARIOUS CLASSES OF CONSUMERS, JAN. 1, 1919, TO SEPT. 1, 1923 ()

(Figures represent number of days supply would last at current rate of consumption at time of stock-taking.)

	Nov. 1, 1918	Jan. 1, 1919	Jan. 1, 1921	Aug. 1, 1921	Nov. 1, 1921	Jan. 1, 1922	Sept. 1, 1922	Jan. 1, 1923	June 1, 1923	July 1, 1923	Aug. 1, 1923	Sept. 1, 1923(b)
Byproduct coke plants.....	35	32	29	31	38	42	11	19	23	26	27	30
Steel plants.....	45	42	42	46	46	48	12	27	29	35	35	33
Other industrials.....	71	65	64	56	67	51	32	40	39	46	54	56
Coal-gas plants.....	85	81	55	79	87	89	34	60	75	89	101	110
Electric utilities.....	49	49	44	44	54	51	26	33	45	48	52	52
Coal dealers, bituminous....	37	39	30	42	46	33	11	16	27	39	45	38
Railroads.....	31	32	23	32	31	35	13	16	21	28	39	44
Total bituminous.....	45	42	39	39	43	41	17	26	30	37	44	46

(a) The figures in this table are estimates based on incomplete data. (b) The rate of consumption used in calculating the days' supply on Sept. 1, 1923, was the quantity consumed in August. (c) Subject to revision.



FIG. 3—DAYS' SUPPLY OF SOFT COAL ON HAND AT INDUSTRIAL PLANTS, SEPT. 1, 1923

At the average rate of consumption that prevailed in August, reserve stocks at industrial plants other than steel and byproduct coke would have lasted on the average 56 days. The map shows how the supply varied from state to state. Note the heavy stocks in New England and those in other states east of the Mississippi. Illinois and West Virginia only had less than 30 days' supply. Based on reports from 2,224 plants.

and in the preceding table are based upon reports of tons on hand and consumed received from about 5,000 consumers, so selected as to be fairly representative of all commercial consumers.

Fig. 3 shows graphically the variation in stocks in each state. The map shows the days' supply held at general industrial establishments, excluding steel and byproduct coke plants. This is the largest group of consumers and the one that shows best the geographical distribution of stocks. Changes in activity in this group are quickly reflected in the coal market, and likewise changes in the coal market soon become apparent in the reserve stocks of industrials.

Taking the country as a whole, the stocks held by general industrial plants on Sept. 1 were sufficient to last 56 days on the average, an increase of two days over the supply on Aug. 1. The importance of consumption in determining the adequacy of a known supply is strikingly illustrated by a comparison of stocks on Sept. 1 with those on Nov. 1, 1921. The actual tonnage on Sept. 1, 1923, was about 15 per cent larger than it was two years ago, whereas it would have lasted 11 days less time, owing to the present greatly increased rate of consumption.

The distribution of stocks as shown by the map in Fig. 3 closely resembles that on other dates when the reserves were large and business was active. The entire territory east of the Mississippi appears to be fairly well supplied, with the heaviest stocks in the long-haul sections such as New England, and the Southern Atlantic and Eastern Gulf Coastal States. The three coal-producing states, Illinois, Maryland, and West Virginia, had less than a 30-days' supply. As usual most of the Middle West and the lignite-burning states had less than 30 days' supply. The Northwest and Rocky Mountain States had supplies ranging from 30 to 90 days.

Reports from electric-utility plants indicated an appreciable addition to stocks, but consumption increased to such an extent that the days' supply—52—was the same as that on Aug. 1. On Nov. 1, 1921, such plants had a 54 days' supply, and on Jan. 1, 1922, a 51 days' supply.

Stocks at coal-gas plants continued to increase in August and a new record—104 days' supply—was established. This was 6 days' larger than the supply on Aug. 1, 1923, and exceeded that on Nov. 1, 1921, by 23 days.

Complete returns from byproduct coke and steel plants showed the following reserves on Sept. 1, 1923, at the rate of consumption in August, and on Nov. 1, 1921:

BYPRODUCT PLANTS			STEEL WORKS		
	Days' Supply—			Days' Supply—	
	Sept. 1, 1923	Nov. 1, 1921		Sept. 1, 1923	Nov. 1, 1921
Low-volatile.....	31	46	Steam coal.....	28	65
High-volatile.....	29	36	Gas coal.....	42	34
Average.....	30	38	Average.....	33	46

As in the case of the general industrials, a simple statement of the number of tons would not properly reflect the adequacy of the supply. Whereas the byproduct coke plants had 77 per cent, and the steel plants 24 per cent more coal on hand on Sept. 1 than on Nov. 1, 1921, the days' supply was 21 per cent and 28 per cent less, respectively.

The railroads added heavily to their supply of fuel coal during August, and on Sept. 1 had on hand close to 16,000,000 tons. This supply, which included the quantity in cars and chutes, as well as that in stockpiles, was sufficient to last 44 days, against a 39-days' supply on Aug. 1, 1921, and 31 days' on Nov. 1, 1921. The present supply is but 19 per cent less than the enormous total of 19,800,000 tons held by the railroads on April 1, 1922.

Retail dealers' deliveries of soft coal increased sharply in August, the average daily rate being more than 20 per cent higher than during July. Receipts were somewhat in excess of deliveries and there was a slight increase in the actual tonnage on hand. Retailers' stocks on Sept. 1 were sufficient to last an average of 38 days, against 45 days' supply on Aug. 1, 1923, 46 days' on Nov. 1, 1921, and 39 days' on Jan. 1, 1919.

All available information indicates that during August there was a comparatively small increase in the quantity of bituminous in transit, which probably did not exceed 2,000,000 tons.

Coal on the Upper Lake Docks.—Practically complete reports show that stocks on the docks of Lakes Superior and Michigan increased from 5,361,000 tons on Aug. 1 to 6,400,000 tons on Sept. 1, 1923. On Nov. 1, 1921, the total was 8,824,279 tons.

Reports from an incomplete list of producers whose store showed that the quantity held by them decreased 672,000 tons on Aug. 1, to 440,000 tons on Sept. 1. Unbilled coal standing in cars at the mines decreased from 560,000 to 470,000 tons, and on Sept. 1 coal awaiting reconsignment at junction points and terminals totaled 37,000 tons, against 65,000 tons a month ago.

Anthracite.—Retail dealers' stocks of anthracite decreased slightly in August, and their total supply on Sept. 1 was perhaps 8 per cent less than on Aug. 1. Reports from the dock operators indicated a total of 506,000 net tons on the Lake Michigan and Lake Superior docks on Sept. 1. Under the stimulus of urgent demand the production of anthracite in August was at a high rate that yielded a total output that has been exceeded but twice during the corresponding months of the past 10 years. It seems quite evident that but little of the household sizes were burned, and that practically the entire quantity of such sizes was added to stocks, either by consumers or retail dealers.

There are no available statistics on householders' stocks,

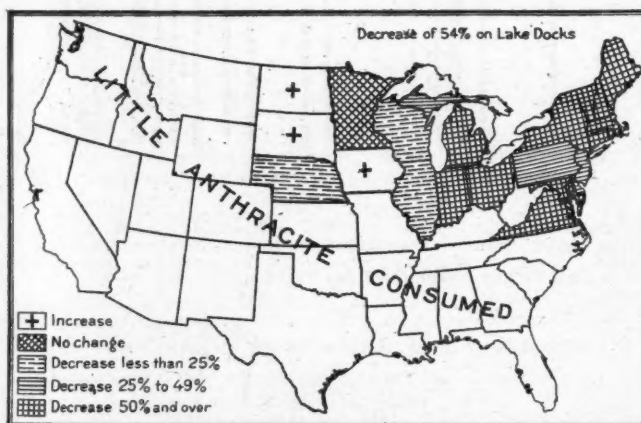


FIG. 4—HOW RETAILERS' STOCKS OF ANTHRACITE ON SEPT. 1, 1923, COMPARED WITH THOSE ON AUG. 1, 1921

Stocks of anthracite in retail yards decreased 7 per cent in August. The supply on Sept. 1 was sufficient to last 21 days at the rate of delivery that prevailed in August. The map shows how stocks on Sept. 1, 1923, compared with those on Aug. 1, 1921. In 12 of the 21 states where anthracite is consumed in quantity the supply on Sept. 1 was at least 50 per cent less than on the earlier date. Only in three states were the stocks larger.

but correlation of production figures and stocks held by retail dealers indicate that householders' bins must be fairly well stocked for this season of the year, even though the carry-over from last winter probably was unusually light. The recollection of their inability to obtain necessary supplies during the winter of 1922, and the apparent certainty of a strike on Sept. 1, 1923, appear to have induced many to obtain their supply earlier than usual. The result has been that current production has passed through the retailers to the consumers, and while retail stocks appear unusually low, the ultimate consumer is in a stronger position thereby.

The deliveries by retail dealers in August were at such a rate that retailers were not able to add to their reserves, and in fact their stocks declined. It has not been possible for the government to make a complete count, but reports from a group of 442 dealers who have reported regularly since 1919 show a total of 777,059 net tons on hand on Sept. 1, 1923, a decrease of about 8 per cent during August. These dealers had 19 per cent less than on Jan. 1, 1919; 47 per cent less than on Nov. 1, 1921; 44 per cent less than on Jan. 1, 1922, and 60 per cent more than on Nov. 1, 1922, when stocks were abnormally low as a result of the miners' strike last year.

Shipments of anthracite off the Upper Lake docks exceeded receipts in August, and the stocks on the docks on Sept. 1 decreased to 506,000 net tons. Stocks on Nov. 1, 1921, were 1,316,000 tons; Jan. 1, 1922, 1,331,507 tons; Sept. 1, 1922, 71,503 tons; Aug. 1, 1923, 608,726 tons.

Stocks of Coke at Byproduct Plants.—The rate of accumulation of coke at byproduct coke plants slowed up considerably in August. The total on hand Sept. 1 was 501,000 net tons, against 430,000 tons on Aug. 1 and 871,000 tons on March 1, 1922.

LATEST MAIL ADVICES from Great Britain are to the effect that no agreement has been reached in regard to the coal-trimming tariff. The matter is the subject of discussion between representatives of the Shipping Federation and the unions. Representatives of the Ministry of Labor also are participating.

Coal-Mine Fatalities High in August Due to Kemmerer Disaster

Accidents at coal mines in the United States during the month of August killed 295 employees, according to reports from state mining departments to the Bureau of Mines of the Department of the Interior. Included in this number are 99 deaths in a gas explosion at Kemmerer, Wyo., on Aug. 14. The output of coal during August was 57,732,000 tons; thus the fatality rate per million tons was 5.11, compared with 3.55 in July. Without the Kemmerer disaster the rate for August would have been 3.39. The August rate last year was 3.72.

From the beginning of 1923 to the end of August, 1,738 fatal accidents have occurred at coal mines, representing a ratio of 3.99 deaths to each million tons of coal produced. During this period the fatality rate for bituminous-coal mines was 3.73 and that for anthracite 5.38. For the corresponding eight months last year—a period covering a five-months strike in the industry—the fatality rate for all mines was 4.17, the bituminous rate being 3.91 and the anthracite rate 6.79. Thus the accident figures for 1923 to date record an improvement over last year's record for both anthracite and bituminous coal mines.

The explosion at Kemmerer, Wyo., on Aug. 14 raised the number of major disasters during the current year to 6 with a total loss of 249 lives, as compared with 8 similar disasters causing a loss of 87 lives during the corresponding eight-months period last year.

The present year's record to date for all fatalities from all causes shows a reduction in the fatality rates per million tons for haulage accidents, for falls of roof and coal, and for electricity; an increase for explosions of gas and dust; and no change in the rate for explosives.

The fatality rates per million tons, by main causes of accidents, during the first eight months of 1922 and 1923 were as follows:

	1922	1923
Falls of roof and coal.....	2.057	1.800
Haulage	0.773	0.684
Gas and dust explosions.....	0.432	0.686
Explosives	0.173	0.179
Electricity	0.161	0.126

COAL-MINE FATALITIES DURING AUGUST, 1923, BY CAUSES AND STATES
(Compiled by Bureau of Mines and Published by Coal Age)

State	Underground												Shaft				Surface						Total by States				
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1923	1922
Alabama.....	1	1	3										6												1	7	10
Alaska.....																										0	0
Arkansas.....																										0	0
Colorado.....	1		1					2					4													4	3
Illinois.....	6		6			1							13												13	9	8
Indiana.....	2		3	1		1							7		1										1	4	2
Iowa.....	2		1										3			1								1	1	0	0
Kansas.....																										4	2
Kentucky.....	3		2										6													6	11
Maryland.....								1																		0	1
Michigan.....																										0	1
Missouri.....	2						1						3	1												4	1
Montana.....																										0	3
New Mexico.....						2							2													2	2
North Dakota.....																										0	0
Ohio.....	5		2	2									9	1												10	1
Oklahoma.....	1												1													1	1
Pennsylvania (bituminous).....	19	2	8			3	1	1					34						1		1			2	36	0	16
South Dakota.....																										0	0
Tennessee.....	1	1	1	1									4													4	1
Texas.....																										0	0
Utah.....	1												1													1	0
Virginia.....	1	3				1		2					7													7	0
Washington.....	1											1	2													3	3
West Virginia.....	18		11					1		1			31		1				3				1	5	9	41	30
Wyoming.....	1		1	99									101													101	0
Total (bituminous).....	65	7	39	103		8	2	7		2			123	2	2	1		5	4		2		1	7	14	253	101
Pennsylvania (anthracite).....	14	3	9	1				1		1			38											4	4	42	2
Total, Augu.....	79	10	48	104		10	2	8	1	2			827	2	2	1		5	4		2		1	11	18	295	
Total, August, 1922.....	59	3	22	1		1		6					395						1	2	2		1	2	8		103

New York Coal Survey Shows Soaring Prices

Edwin J. O'Malley, Commissioner of Public Markets of New York City, issued a reply Oct. 5 to Governor Smith's series of questions relative to the coal situation in New York. In a detailed examination of coal supplies, prices and alleged profiteering in the city, Commissioner O'Malley says consumers have reached the limit of their patience in standing a continued increase in the cost of coal.

The prevailing price of anthracite in June, 1923, according to Mr. O'Malley, was \$13.50, which obtained until the suspension of operations in the mines, Aug. 31. At the present time, however, says the Market Commissioner, the price has been fixed at \$14.25 in Manhattan with 50c. for delivery and 25c. extra for trimming, making a ton of coal delivered to the cellar cost \$15. The dealers have thus shifted the cost of a part of the delivery upon the consumers."

Regarding profiteering the Commissioner says: "This question is difficult to answer. The question as to whether profiteering existed would depend wholly upon how much was paid for the coal. Books of dealers would have to be investigated to get this information.

"This office would view any price exceeding the price set by the old dealers, \$14.25 to \$14.50, as profiteering. The Brooklyn, Queens and Staten Island prices, ranging up to and exceeding \$17.50, are simply unanswerable. The standard dealers themselves realize that these prices are doing no good to the coal dealers. The dealers who are charging these prices claim they are having to pay independent coal operators higher prices. In connection with this, the situation extends to the mines and includes the old controversy of the higher prices charged by the 'wildcats' and the regular independents. The writer is of the opinion that the State of Pennsylvania could and should easily absorb the cost of the strike, that is, the 60c. a ton paid to the miners.

"In view of the fact that very little coal had been coming into the city previous to this investigation, and no deliveries being made, consumers were obliged to order without knowing the quantity or quality of coal they would get or what price they would have to pay. The situation was, to say the least, and still is, pregnant with opportunity on the part of dealers or operators inclined to profiteer."

Tillson's Resignation Greatly Regretted

At the Buffalo meeting of the National Safety Council, held at the Hotel Statler, Oct. 1-5, the Mining Section with much regret accepted the resignation of Benjamin F. Tillson, who for many years has been the chairman of that section. Mr. Tillson was reappointed a director to succeed himself.

In all its history the section has had only two chairmen—the late H. M. Wilson and B. F. Tillson. Mr. Tillson's work has been most fruitful of results. In consequence of it the Bureau of Mines has widened its statistical inquiry into the causes of accidents and their number and duration. The Bureau of Standards is undertaking an inquiry into a means of ascertaining the condition of the entire length of a wire rope without destroying any part of it. The National Safety Council has made an arrangement with C. Lorimer Colburn whereby Mr. Colburn has traveled the country in the joint interest of the Bureau of Mines and the Council, making possible the formation of three conferences, one at Butte, one at Globe and one at Duluth, and finally the American Institute of Mining and Metallurgical Engineers has formed a Committee on Safety to hold with the Mining Section of the National Safety Council a meeting to discuss safety at the annual New York session of the former body.

For the ensuing year R. Dawson Hall, engineering editor, *Coal Age*, was elected chairman; John L. Boardman, safety engineer, Anaconda Copper Mining Co., Butte, Mont., first vice-chairman; J. B. Warriner, Lansford, Va., general manager, Lehigh Coal & Navigation Co., second vice-chairman; George Martinson, Pickands Mather Co., Hibbing, Minn., third vice-chairman, and C. Lorimer Colburn, U. S. Bureau of Mines, Washington, D. C., secretary.

The general officers of the National Safety Council are: L. A. Du Bois, president; Henry A. Reninger, vice-president in charge of industrial safety, including the mining section; Homer E. Niesz, vice-president and treasurer; Marcus A. Dow, vice-president in charge of public safety; C. B. Auel, vice-president in charge of general activities; George T. Fonda, vice-president in charge of local councils; David Van Schaack, vice-president in charge of public relations, and W. H. Cameron, managing director and secretary.

Mr. Colburn, for the Bureau of Mines, is touring the country in behalf of the Joseph A. Holmes Safety Association. Though he is not now giving his full time to the work of the National Safety Council he is permitted to perform for it such services as may be accomplished without interference with his other duties, which, by the way, will shortly provide for visits to coal-mine regions.

Reds Receive Aid and Encouragement from Non-Union Operators, Says Searles

Replying to the recent statement of John C. Brydon, president of the National Coal Association, which ridiculed the recent exposé by the United Mine Workers of Communist activities in the coal fields, Ellis Searles, editor of the *United Mine Workers' Journal*, charged in a statement issued Oct. 7 that "Communists and other destructive Reds have received substantial encouragement and aid from non-union coal operators." At the same time Mr. Searles, in behalf of the union, proposed that a committee of the U. S. Senate make a thorough investigation of the subject and predicted that, if that were done, "there are persons in and out of the coal industry who probably will feel like running for cover."

"It is significant," said Mr. Searles, "that the only attack upon the revelations contained in those articles came from the non-union coal operators, who are managing and directing the National Coal Association. These non-union operators are as anxious as the Communists to wreck and destroy the United Mine Workers of America. Both are working to accomplish the same purpose, and the fact that these non-union operators, headed by John C. Brydon, have thus joined hands with the Communists and rushed to their defense has done much to confirm the well-grounded belief among the union miners that the Communists and other destructive Reds have received substantial encouragement and aid from non-union coal operators in their various activities."

Mr. Searles said that some newspapers in commenting on the union's exposé "criticized the United Mine Workers of America because this organization did not make public during, or before, the trials at Herrin, Ill., the fact that the Herrin massacre was fomented, instigated and engineered by Communists, instead of waiting until months afterward. The fact is, we were not aware of the Communist plot until after the Herrin trials. Therefore, it was impossible for the union to expose the matter at that time. The facts were given to the public as soon as it was possible to do so in definite form. The Herrin massacre occurred in June, 1922. We started our investigation of Communist activities in February, 1923, and the investigation was not completed until the last of August, 1923. We published the exposé in the week of Sept. 10."

THE U. S. SUPREME COURT has been asked to set for early argument the appeal of the Federal Trade Commission in the injunction suit instituted against it by the Claire Furnace Co., the Ella Furnace Co., the Reliance Coke Co., and others. This controversy, which involves the right of the Federal Trade Commission to require the filing of production, cost and sales reports of goods entering into interstate commerce, arose in the Supreme Court of the District of Columbia. The courts of the District of Columbia held that the Commission had no right to compel the production of this information and the government appealed. The government says the effect of the injunction is to hamper the Commission in its investigations.

Flood of Coal Legislation Expected to Feature Forthcoming Session of Congress

All Factions Likely to Introduce Proposals for Curb on the Industry
—Look to President to Ask Prompt Consideration of Commission's Findings—Speculation on Likelihood of Bituminous Strike

BY PAUL WOOTON

Washington Correspondent of *Coal Age*

An avalanche of coal bills may be expected at the forthcoming session of Congress. The number of radical members has increased in each house. Almost every one of them is waiting impatiently for an opportunity to place drastic curbs on an industry so important and basic as is the production, distribution and marketing of coal. Administration members will be prompt to support the Coal Commission by introducing the numerous bills which would be necessary to cover the legislation requisite to carrying into effect the Commission's recommendations. In addition, there will be various legislative proposals from members outside the two groups mentioned who will put forward ideas of their own in view of the fact that coal legislation will be one of the matters likely to receive early attention.

The President is expected to ask Congress in his first message to give prompt attention to the report of the Coal Commission. While it is possible that Mr. Coolidge will suggest the specific legislation which he deems necessary to carry the Commission's ideas into effect, it is thought more likely that he will not undertake detailed recommendations. It is thought most probable that the President's first message will do no more than commend the report to the early and careful consideration of the legislative branch. There is reason to believe, however, that Mr. Coolidge will not be content to allow the matter to drift if he can prevent it. If Congress does not take hold of the problem vigorously, many expect the President to make specific requests for the legislation which he deems necessary to a better functioning of the coal industry.

TROUBLE LOOMS IN BITUMINOUS-COAL INDUSTRY

The new Congress will not have been in session long, however, before the black clouds of trouble in the bituminous industry will be much in evidence. Before the Congress is two months old there will be abundant indications that a great strike is likely. This in itself will hasten the consideration of coal legislation.

The fact that the anthracite mine workers have received an increase in their wage makes it absolutely certain that the bituminous workers will demand an equal if not a greater increase. It already is apparent that the operators in the union fields will be in no frame of mind by the first of the year to concede any wage advance. A deadlock is rather expected to occur early in the negotiations.

The predictions now being made that there will be no bituminous strike are based on the belief that the odds are sufficiently against the union to preclude the men going out if their demands are denied. It probably is true that the accumulation in the United Mine Workers' treasury is small. It is true that the railroad workers are not likely to assist them. It is true that they will not have the help of a simultaneous strike on the part of the anthracite workers. It is true that the non-union fields will be in a position to furnish more coals than ever before—probably enough to meet most of the requirements of the country. Those who are making these predictions, however, are underestimating the power and the determination of the United Mine Workers of America. Even with the odds against them, those best informed believe, they will not hesitate for a minute to call a strike if it should be decided that it is justified.

All admit that there will be great pressure from the public for legislation. It is not greatly concerned with the difficulties of the industry and there will be no particular

pressure to rid coal of needless competition or the thousand and one other internal difficulties from which it is suffering. What the public wants is relief from high prices and an assurance of continuity of coal supplies. The public's conception of price, in many parts of the country, is based on the prices demanded for anthracite. The fact that bituminous coal may be available to them at less than cost frequently is overlooked. The public evidently has reached a point where it wants some guarantee and it will not be surprising to see strong pressure behind bills proposing compulsory inspection of coal shipped in interstate commerce or a bill going even so far as to propose limitation of coal prices.

The suggestion of Representative J. J. Rogers, of Massachusetts, that an embargo be placed against exports of anthracite has not been given full consideration by President Coolidge, it was stated at the White House. It was said, however, that the President is inclined to believe that an embargo would be a matter "of considerable delicacy" which would require careful consideration both as to its advantages and disadvantages and as to the possible reaction in foreign countries which depend upon imports of anthracite from the United States.

I. C. C. Grants Virginian Ry. Rehearing

Thorough discussion of the proposal to withhold trackage from new coal mines, before final action is taken, is insured by a decision of the Interstate Commerce Commission Oct. 6 allowing a rehearing in the case. The rehearing will begin in Washington, Oct. 19, before Charles D. Mahaffie, director of the finance bureau of the Commission. Last June the Commission denied an application of the Virginian Ry. to extend its rail facilities to additional mines on the ground that the railroad company is not in a position to insure a constant car supply to the properties already having trackage connections. The case is regarded as one of the most important which has come before the Commission. The proponents of the principle of such control are actively supporting the Commission's position, which is certain to be assailed vigorously by those who do not want to see this obstacle raised against the opening of more coal mines.

DUE TO THE FACT that the Coal Commission was unable to go deeply into the study of intermittency in the operation of coal mines, the Department of Commerce expects to take up again its study of the subject. The department had made a good start on study of intermittency when the work was interrupted by the coal strike last year. With the information already at its disposal, the department will be able to complete the work in a comparatively short time, it is believed.

AN INDICATION of the regard in which F. R. Wadleigh is held by those concerned with coal is set forth in an analysis by a representative of the American Mining Congress of letters received by Mr. Wadleigh just prior to the termination of his duties as Federal Fuel Distributor. The communications are from representatives of the coal industry, railroads, national associations and state fuel administrators.

Pinchot Requests Coal Commission Data In Move to Reduce Fuel Prices

In a new move to reduce fuel prices to consumers Governor Pinchot of Pennsylvania, according to a press report, has made a formal request for the information gathered by the U. S. Coal Commission in its recent survey of the coal industry, now in possession of the U. S. Geological Survey. It is said, however, that his request will be refused.

According to word reaching the Department of the Interior, Mr. Pinchot believes that with certain data from the Coal Commission he could reduce the cost of fuel. He is anxious to get all data compiled in connection with the questionnaires sent out to the operators by the Coal Commission.

Governor Pinchot still holds to the opinion that the increase granted to the miners should be absorbed by the operators and not by the consumers. In his request to the Coal Commission for the data contained in the questionnaires it was said that he expressed the opinion that the information should be made public and not pigeonholed in the office of the U. S. Geological Survey. With this information in the hands of the public Governor Pinchot believes that his position in the matter would be clarified.

Officials of the Interior Department, however, declare that the operators gave the government the information of their production costs solely for governmental use and not for political-campaign purposes. Officials of the department believe they have no authority to make the information public. A suggestion was made that the Attorney General might be asked for a formal opinion as to the legality of the department retaining the information being sought by Mr. Pinchot.

Wadleigh Urges Industrial Co-operation In Helping Coal Industry

That the Department of Commerce and the Bureau of Mines may have the advantage of the viewpoint of industry in connection with their work on coal, F. R. Wadleigh, recently Federal Fuel Administrator and now coal specialist employed jointly by the Department of Commerce and the Bureau of Mines, has addressed the following letter to a number of leaders in the coal industry:

"Having resumed my former work as chief of the Coal Division, Bureau of Foreign and Domestic Commerce, Department of Commerce, I desire to make the work of the division of the greatest possible use to the coal industry, not only as regards foreign markets but also in the domestic trade. I have already arranged to continue the issue, monthly, of the survey of general conditions in the domestic trade, and of the statement relating to overseas coal markets, as both of these seem to have met with general approval and to be a distinct service to the trade, as well as to consumers.

"In order however, to broaden the activities of the division, I should like to have the views of leaders in the industry as to how the desired results can best be accomplished and will, therefore, appreciate an expression from you, at your early convenience, on the subject. I believe that the Coal Division can be of considerable service to the industry, provided it can obtain the co-operation and assistance of those engaged in it.

"Particularly, I should like to have your opinion on the advisability and value of the appointment of an advisory committee to be made up not only of operators but also of representatives of the wholesalers and of the retail dealers. It seems to me that such a committee, properly constituted, would be of considerable value to the industry and, through the wide ramifications of the Department of Commerce, together with the technical activities of the U. S. Bureau of Mines, with which I am also connected, could be made of great service, in the way of securing and making available a fund of information, both economic and technical, and could also formulate and put in effect plans for closer

relations with the railroads and the general public, as well as between the various branches of the industry itself.

"My unofficial position as connecting link between the American Railway Association, the individual railroads and the Department of Commerce should give the means of keeping the industry in closer contact with the railroads."

Electric Power Service to Mines Spreads Through Kentucky

Kentucky coal mining may be largely affected by power development just announced by the Insull public-utility interests. The plans of these organizations call for larger and better power developments in the state, with hook-up connections which will make it possible to supply current to the various mine districts even if one unit or power plant is shut down through accident.

A \$3,000,000 steam plant will be erected by the Indiana Public Service Co., at Jeffersonville, Ind., on the Ohio River, across from Louisville. This will be hooked up at Louisville to high-tension transmission wires which will run to Lexington, Ky., over to Dix River, where a large hydro-electric plant is to be installed, by the Kentucky Hydro-Electric Co., a subsidiary. From this plant there will be a hook up to southeastern Kentucky, where the Kentucky Utilities Co., another subsidiary, has big power plants at Varilla, Ky., and also at Pocket, Va., producing power at the mouth of the mines, from low cost fuel. A million-dollar power plant is also being started four miles from Pineville, on the Kentucky River.

The Insull interests also plan to carry high tension lines from Louisville south and west to the western Kentucky coal fields, where the Kentucky Utilities Co. operates over 200 miles of transmission lines serving a large number of mines, and a number of towns. The company has several plants in western Kentucky, and controls the power plants of the Duncan Coal Co. of Greenville, and St. Bernard Mining Co. of Earlington, each of 5,000 hp. or better, producing power on screenings direct from the mines to the boiler rooms. These plants are under lease to the utilities company, which in turn sells power to the companies owning the plants, and buys fuel from the owners.

In addition the Louisville Gas & Electric Co., is planning a big hydro-electric plant, at the Falls of the Ohio, at Louisville, which will have a capacity of 400,000 kw.-hr., more current than is now used by all the utilities in Louisville, and will be in service 70 per cent of the year. This plant will have surplus power for sale, some of which can be utilized by the Insull interests if needed.

"Giant Power Board" Organized

Pennsylvania's Giant Power Board recently was organized at Harrisburg, and its purpose will be to make a survey of the power resources of the state. Morris L. Cooke, formerly Director of Public Safety of Philadelphia, was elected director in charge of the survey. The board was provided by an act of 1923 and is a part of the plan of the Governor to develop the electric and water power of the Commonwealth so that cheap energy may be provided for its citizens. Governor Pinchot presided at the opening meeting and called attention to the probable far-reaching effect of giant power on the coal industry.

The Giant Power Survey Board consists of the Governor, the Attorney General, the Secretary of Forests and Waters, the Chairman of the Public Service Commission, the Secretary of Agriculture, the Secretary of Labor and Industry, the State Geologist, a Deputy Attorney General and an engineer. Deputy Attorney General Philip P. Wells and Robert H. Fernald, director of the department of mechanical engineering at the University of Pennsylvania, have been designated by the Governor to these two latter places.

ORAL ARGUMENT before the Interstate Commerce Commission of the case of the Victor-American Fuel Co. vs. the Denver & Salt Lake Railroad Co. will be conducted in Washington on Oct. 15 before the full Commission.

Denying Gouging, Warriner Blames Higher Anthracite Prices on Pinchot and Mines

Denying that anthracite operators have been gouging, Samuel D. Warriner, chairman of the Anthracite Operators' Policy Committee, places the entire blame for the high cost of coal directly at the feet of labor. Addressing 200 at a luncheon of the City Club, of Philadelphia, Oct. 5, Mr. Warriner said that "the last increase, the price of peace in the mine fields, was Governor Pinchot's method of assuring a winter's supply of coal, and he must shoulder the responsibility for it."

He declared that the operators were in accord with the Governor in his plan to settle the strike in order to prevent a coal famine, but the 10-per cent wage increase which the Governor had at that time declared necessary was not justified. The Governor had been warned that it would be paid by the consumer.

The drastic house cleaning that the Governor declared necessary in the industry in a recent address did not apply to the operators, in Mr. Warriner's opinion, but to the United Mine Workers of America.

Governor Pinchot's peace plan, according to Mr. Warriner, showed conclusively that to the Governor the important thing was to get the miners back to work, and that price was secondary.

Speaking specifically, Mr. Warriner said that the high cost of coal was due directly to the high wages of the miners, out of all proportion to other industries; to the reluctance of the men to do a full day's work; to the reduction in the number of hours to eight, without any similar wage reduction; to the increase in the cost of materials, and to the restrictions upon the men placed by the United Mine Workers of America.

"The operators," he declared and backed up his assertion by figures, "cannot absorb the last increase, and it is unfair for the Governor to blame it on the industry, when we have no jurisdiction whatever over transportation costs or distribution methods."

WAGES UP 170 PER CENT; COAL COST, 120 PER CENT

"Since the pre-war period the wages of anthracite miners have risen approximately 170 per cent," he declared, "while the cost of coal has only increased 120 per cent. The cost of living during the same time increased only 50 per cent. The annual wage bill for mining the 70,000,000 tons of anthracite was \$113,000,000 in 1913-14. In 1921, the last full year, it had jumped to \$285,000,000. Now, with the added 10 per cent increase, it will jump to about \$325,000,000. During the same period the cost of materials necessary in mining operations had increased in about the same proportion."

"Now as to the price of coal. In 1913-1914 a ton of nut coal cost \$7.25. Today, under the new schedule, it costs \$16, an increase of 120 per cent. There is no justification for such a price. It is economically unsound and will result in a discontinuance of the use of anthracite, and will have its effect on the prosperity of the operators and on the earnings of the men."

Mr. Warriner said "the men receive on an average \$1,800 a year. Skilled men receive as high as \$5,000 a year, and by reason of the last increase the average wage will be \$1,990."

"The operators want cheap coal, wide distribution and active marketing. That spells prosperity for us all. There is no autocracy in the industry. We have better schools in the mining sections than in most communities. The miners have good homes, garages, automobiles. The savings-bank deposits have trebled in our communities. Our employees gradually are becoming stockholders in our operating companies. There surely is no autocracy."

"Approximately 50 per cent of the coal mined is of the small buckwheat sizes, not used in homes. It must be sold in competition with bituminous. We are, therefore, unable to add the last wage increase to the cost of this coal. Necessarily, we pass it on the domestic sizes. If we can educate the public to use the buckwheat sizes in their

homes it will, naturally, reduce the demand for anthracite, and thus lower prices eventually will come about. We are now working on plans for bringing this to the attention of the public."

The City of Philadelphia, through the Girard Trust, is getting a share of the increased coal costs, according to Mr. Warriner. "The operators who lease the coal lands of the Girard Estate pay a royalty on a sliding scale basis. The higher the price, the greater the royalty. So you see your own city is profiteering."

U. S. Shipping Board Opens Coal Bids In New York and Norfolk

The U. S. Shipping Board opened bids at New York on Oct. 4 for furnishing and delivering alongside vessels New York harbor on Oct. 11, 2,300 gross tons of Pool 9 bituminous coal. The following proposals were received: Imperial Coal Corporation, \$4.87 per ton; Johnstown Coal & Coke Co., \$5.64; Penn Fuel Co., 4.97; Gormley Coal Co., \$5.39; Rhodes Fuel Corporation, \$4.88; Knickerbocker Fuel Corporation, \$5.04; Seiler Coal Co., \$4.88; Campbell, Peacock & Kinzer, \$5.20; W. A. Marshall & Co., \$4.98; Commercial Coal Co., \$5.39; Lee Coal Co., \$4.84; Hartmann Coal Co., \$5.28; Pattison & Bowns, Inc., \$5.40; Dexter & Carpenter, \$5.52, and H. B. W. Haff, \$5.15. The bids ranged on a basis of about \$1.65 to \$2.36 per net ton f.o.b. mine.

Bids opened by the U. S. Shipping Board at Norfolk, Va., for furnishing and delivering f.o.b. piers, Hampton Roads, 1,600 gross tons of Pool 1 and or Pool 2 (Pocahontas and New River) coals on Oct. 16 brought the following quotations: Hasler & Co., \$4; Brown Coal Co., \$4.19; Johns Bros., \$4.25, and Lake & Export Co., \$4.50, or on a basis of \$1.32 to \$1.76 per net tons f.o.b. mine.

Wadleigh Prepares Data on Coal Exchanges

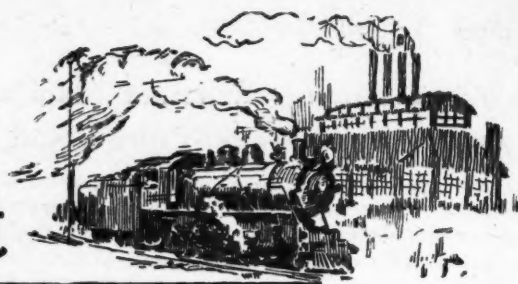
With the idea of calling the attention of the American coal industry to the advantages of maintaining various coal exchanges, F. R. Wadleigh, former Federal Fuel Distributor, acting in his capacity as chief of the Commerce Department's Fuel Division, is compiling information on the subject. In addition to soliciting the views of prominent men engaged in the coal trade here, he is securing authoritative statements from the managers of the coal exchanges in England. During his long residence in England as the representative of a large American coal exporting company, Mr. Wadleigh was much impressed with the benefits which were derived from the maintenance of the coal exchange.

A special report on export methods also is being prepared under Mr. Wadleigh's direction.

A SUPPLEMENTAL FOURTH SECTION ORDER issued Oct. 2 by the Interstate Commerce Commission suspended the effective date of certain tariffs ordered to be put into effect by the Commission in its decision in Docket 12698 in the Ohio-Michigan coal case. In Application No. 1952, filed by the Louisville & Nashville R.R., and No. 1764, filed by the Chesapeake & Ohio Ry., these carriers sought authority to continue to charge for the transportation of coal from mines in the Inner Crescent group to Detroit, Mich., rates which are lower than those contemporaneously in effect on like traffic to Tama, Ohio; Jackson, Mich., and other intermediate points, and the Kanawha & Michigan Ry., in Application No. 554, sought authority to continue to charge for the transportation of coal from the Kanawha district in West Virginia to Jackson, Mich., rates which are lower than those contemporaneously in effect to Pontiac, Mich., and other intermediate points in the Lansing group. These applications were denied by the Commission in its Fourth Section Order No. 8750, and rates corresponding with the Commission's order were to have been put into effect on Sept. 27, 1923. The supplemental order suspends the effective date of these tariffs until Nov. 26, 1923, which allows the railroads to continue the above-mentioned rates in effect until that date.



Production and the Market



Weekly Review

Prices for soft coal continue to slip downward, while production shows a slight drop, due to the resumption of anthracite mining. Production of soft coal reached 11,737,00 net tons in the last week in August whereas during the week ended Sept. 29 it declined to 11,308,000 tons, a drop of 429,000 tons. For the week ended Oct. 6 preliminary reports indicate a further decline. In spite of the reaction, however, the present rate of daily production, though below the record years 1918 and 1920, is well above 1919, 1921 and 1922. There were about 56,000,000 tons of soft coal in storage as of Sept. 1, according to the government stock report, an increase of about 4,000,000 tons over the revised figures for Aug. 1.

PRICE OF BITUMINOUS COAL DECLINES SHARPLY

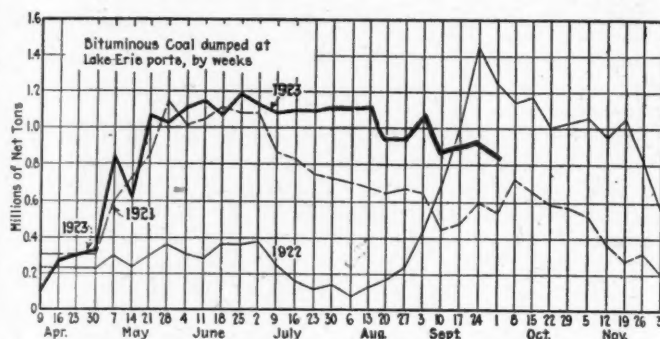
Soft-coal prices declined six points last week, *Coal Age* Index registering 190 on Oct. 8, while the average price was \$2.30 as compared with \$2.37 the previous week. Declines occurred in Springfield, eastern and western Kentucky, Hocking, Clearfield, Cambria and Somerset and Pocahontas coals, while Mt. Olive advanced.

Production of anthracite is climbing, 2,025,000 net tons having been produced during the week ended Sept. 29, the first full week of mining since the termination of the strike, with indications pointing to about the same output for last week.

Lack of demand has caused a reduction in the running of most soft-coal mines. Coal for screenings has relaxed, causing an accumulation in some districts together with a lowering of prices. Buyers continue on a hand-to-mouth basis, due to heavy reserve stocks and the prospect of lower prices. Car supply has improved in some sections, while lost time because of "no market" has increased, caused in part by the reaction against better demand in anticipation of the anthracite strike.

The sag in the Chicago market continues. A smaller

volume of screenings is coming forward because of the cut in mining, giving operators hope of a stiffening of prices. Domestic demand in most regions is firmer. In New England the market seems duller. There are no increases in inquiries and no indications of improvement. Spot buying has practically stopped and contractors are curtailing shipments. The Ohio market is dull and in some sections as bad as at any time during

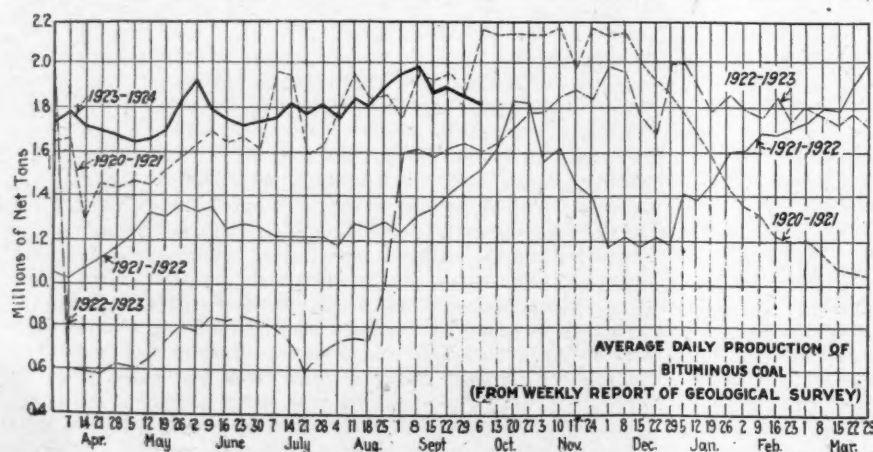


	Week Ended Oct. 1	Season to Oct. 1
Cargo	786,782	22,014,123
Fuel	50,008	1,192,258
Totals	836,790	23,206,651

the summer. The Pittsburgh market has declined from last week and consumers are showing no interest.

Lake shipments have declined during the past month, dumpings during the week ended Sept. 30 amounting to 836,790 net tons of cargo and bunker coals.

Export demand is quiet and there are no indications of improvement. Shipments from Baltimore during the first nine months of 1923 amounted to 1,426,767 tons of cargo and bunker coal and 175,723 tons of coke. Dumpings for all accounts at Hampton Roads during the week ended Oct. 4 totaled 324,093 net tons as compared with 256,730 tons in the previous week.



Estimates of Production

(Net Tons)

BITUMINOUS

	1922	1923
Sept. 15	9,737,000	11,378,000
Sept. 22 (a)	9,747,000	11,454,000
Sept. 29 (b)	9,822,000	11,308,000
Daily average	1,637,000	1,885,000
Calendar year	1,174,000	1,795,000
Daily av. cal. year	271,015,000	413,435,000

ANTHRACITE

Sept. 15	4,127,000	2,000
Sept. 22	1,897,000	877,000
Sept. 29	1,982,000	2,025,000

COKE

Sept. 22 (b)	139,000	335,000
Sept. 29 (a)	162,000	321,000
Calendar year	4,785,000	14,502,000

(a) Subject to revision. (b) Revised from last report.

Demand for bituminous screened coals and for coke as substitutes for anthracite has practically stopped, although there is a greater movement of coke than of the former. Inquiry for Welsh anthracite is slow and few new orders are reported as being booked.

Little Market Life at Chicago

The sag in coal continues in the Middle West, as reflected on the Chicago market. Demand for domestic sizes has not materially improved, so that prices on lump and egg Illinois and Indiana coals continue about the same as last week. The egg moves with difficulty. Lack of demand, however, has reduced the running time of most mines so that the volume of screenings has fallen off some. This encourages many sales agencies to hope that screenings will soon stiffen a little. Right now they remain at the bottom.

No interest worth mentioning has yet been shown in any coal reaching this market. Smokeless remains difficult to sell at \$3 for mine-run, and anthracite, now shipping here in some volume, remains a long time in storage yards. Real cold weather is essential and none is in prospect. The gen-

eral impression among the best-informed men in Chicago is that no important rise in the market can reasonably be expected for two or three weeks and that even then it will be a slow one, producing no price peaks during the entire winter—barring some powerful, and now unseen, influence.

In the Illinois fields there is not much activity. Everyone is saying the other fellow should shut down. The southern field is still a good deal clogged by no bills on egg and smaller sizes in spite of dumping screenings at almost any price. The DuQuoin field is running light except for one or two mines. Mt. Olive no-bills on steam sizes are holding up the production of almost everything else. Standard field conditions were fairly good until about Oct. 1, when the general slump slowed down every mine and no-bills piled up.

St. Louis Trade Dull

Mild weather in St. Louis has put an end to domestic deliveries and the dealers have no orders on hand. Their yards are full of coal and some of them are obligated to continue to take coal on contract with no place to put it. The demand has been for the middle-priced coal and the

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern					Midwest						
Market Quoted	Oct. 9 1922	Sept. 24 1923	Oct. 1 1923	Oct. 8 1923†	Market Quoted	Oct. 9 1922	Sept. 24 1923	Oct. 1 1923	Oct. 8 1923†		
Smokeless lump.....	Columbus....	\$6.75	\$5.95	\$6.10	\$6.00@ \$6.25	Franklin, Ill. lump.....	Chicago....	\$5.40	\$4.15	\$4.05	\$3.75@ \$4.35
Smokeless mine run.....	Columbus....	5.75	3.00	3.10	2.85@ 3.25	Franklin, Ill. mine run.....	Chicago....	4.50	3.00	2.85	2.25@ 3.00
Smokeless screenings.....	Columbus....	5.60	2.35	2.35	2.15@ 2.40	Franklin, Ill. screenings.....	Chicago....	3.25	1.40	1.30	1.00@ 1.50
Smokeless lump.....	Chicago....	6.25	6.10	6.10	6.00@ 6.25	Central, Ill. lump.....	Chicago....	5.10	3.10	3.10	3.00@ 3.25
Smokeless mine run.....	Chicago....	5.60	2.85	2.85	2.75@ 3.00	Central, Ill. mine run.....	Chicago....	3.60	2.20	2.10	2.00@ 2.25
Smokeless lump.....	Cincinnati....	6.30	6.10	6.10	6.00@ 6.25	Central, Ill. screenings.....	Chicago....	2.80	1.00	.95	.60@ .80
Smokeless mine run.....	Cincinnati....	5.95	3.00	2.75	2.50@ 3.00	Ind. 4th Vein lump.....	Chicago....	5.10	3.35	3.35	3.25@ 3.50
Smokeless screenings.....	Cincinnati....	5.80	2.25	1.85	1.25@ 2.00	Ind. 4th Vein mine run.....	Chicago....	4.60	2.60	2.60	2.50@ 2.75
*Smokeless mine run.....	Boston.....	7.25	5.05	4.80	4.75@ 4.90	Ind. 4th Vein screenings.....	Chicago....	3.80	1.35	1.25	1.15@ 1.30
Clearfield mine run.....	Boston.....	4.25	2.15	2.20	1.85@ 2.50	Ind. 5th Vein lump.....	Chicago....	5.10	2.75	2.50	2.25@ 2.75
Cambria mine run.....	Boston.....	4.50	2.85	2.85	2.25@ 3.25	Ind. 5th Vein mine run.....	Chicago....	4.35	2.10	2.10	2.00@ 2.25
Somerset mine run.....	Boston.....	4.30	2.35	2.35	2.00@ 2.75	Ind. 5th Vein screenings.....	Chicago....	3.35	1.05	1.05	.75@ .90
Pool 1 (Navy Standard).....	New York....	5.25	3.25	3.25	3.00@ 3.25	Mt. Olive lump.....	St. Louis....	.....	3.00	3.00	3.00@ 3.25
Pool 1 (Navy Standard).....	Philadelphia..	.....	3.25	3.25	3.00@ 3.40	Mt. Olive mine run.....	St. Louis....	.....	2.25	2.25	2.20@ 2.30
Pool 1 (Navy Standard).....	Baltimore....	5.50	.....	.....	.....	Mt. Olive screenings.....	St. Louis....	.....	1.25	1.25	1.20@ 1.30
Pool 9 (Super. Low Vol.).....	New York....	4.65	2.55	2.50	2.25@ 2.50	Standard lump.....	St. Louis....	4.25	2.80	2.80	2.50@ 3.15
Pool 9 (Super. Low Vol.).....	Philadelphia..	4.35	2.55	2.60	2.40@ 2.70	Standard mine run.....	St. Louis....	3.35	2.05	2.05	1.80@ 2.30
Pool 9 (Super. Low Vol.).....	Baltimore....	4.85	2.45	2.40	2.40	Standard screenings.....	St. Louis....	2.10	.80	.55	.50@ .60
Pool 10 (H.Gr. Low Vol.).....	New York....	4.10	2.15	2.10	1.90@ 2.25	West Ky. lump.....	Louisville...	5.25	2.35	2.25	2.50@ 2.65
Pool 10 (H.Gr. Low Vol.).....	Philadelphia..	3.85	2.10	2.15	1.95@ 2.25	West Ky. mine run.....	Louisville...	3.60	1.90	1.85	1.50@ 2.00
Pool 10 (H.Gr. Low Vol.).....	Baltimore....	4.25	2.25	2.25	2.25	West Ky. screenings.....	Louisville...	3.25	.85	.75	.50@ .60
Pool 11 (Low Vol.).....	New York....	3.60	1.85	1.85	1.75@ 1.95	West Ky. lump.....	Chicago....	4.50	2.60	2.60	2.50@ 2.75
Pool 11 (Low Vol.).....	Philadelphia..	3.35	1.85	1.85	1.75@ 1.90	West Ky. mine run.....	Chicago....	4.10	1.95	1.95	1.50@ 2.00
Pool 11 (Low Vol.).....	Baltimore....	4.05	2.00	2.00	2.00						
High-Volatile, Eastern					South and Southwest						
Pool 54-64 (Gas and St.).....	New York....	4.05	1.75	1.75	1.50@ 1.85	Big Seam lump.....	Birmingham..	3.45	3.75	3.75	3.65@ 3.90
Pool 54-64 (Gas and St.).....	Philadelphia..	4.00	.....	1.75	1.60@ 1.85	Big Seam mine run.....	Birmingham..	2.60	1.95	1.95	1.75@ 2.15
Pool 54-64 (Gas and St.).....	Baltimore....	4.05	1.75	1.60	1.60	Big Seam (washed).....	Birmingham..	3.10	2.35	2.35	2.25@ 2.50
Pittsburgh se'd gas.....	Pittsburgh...	5.40	2.80	2.55	2.50@ 2.65	S. E. Ky. lump.....	Chicago....	6.25	3.35	3.35	3.25@ 3.50
Pittsburgh gas mine run.....	Pittsburgh...	3.60	2.40	2.25	2.15@ 2.25	S. E. Ky. mine run.....	Chicago....	4.75	2.25	2.25	2.00@ 2.50
Pittsburgh mine run (St.).....	Pittsburgh...	3.60	2.15	2.05	1.75@ 2.00	S. E. Ky. lump.....	Louisville...	7.00	3.10	3.25	3.00@ 3.50
Pittsburgh slack (Gas).....	Pittsburgh...	4.00	1.40	1.25	1.15@ 1.25	S. E. Ky. mine run.....	Louisville...	4.75	2.00	2.00	1.75@ 2.25
Kanawha lump.....	Columbus....	6.50	3.15	3.15	2.85@ 3.50	S. E. Ky. screenings.....	Louisville...	4.10	1.05	1.05	.75@ 1.00
Kanawha mine run.....	Columbus....	4.60	1.90	1.85	1.75@ 2.00	S. E. Ky. lump.....	Cincinnati...	6.50	3.50	3.60	3.00@ 3.60
Kanawha screenings.....	Columbus....	4.50	1.05	1.05	.90@ 1.00	S. E. Ky. mine run.....	Cincinnati...	4.75	1.60	1.60	1.25@ 1.60
W. Va. lump.....	Cincinnati...	6.50	3.75	3.50	3.25@ 3.50	S. E. Ky. screenings.....	Cincinnati...	4.00	1.05	1.00	.75@ 1.00
W. Va. Gas mine run.....	Cincinnati...	.....	1.75	1.75	1.25@ 1.50	Kansas lump.....	Kansas City..	5.50	4.50	4.50	5.00
W. Va. Steam mine run.....	Cincinnati...	.....	1.75	1.75	1.25@ 1.50	Kansas mine run.....	Kansas City..	4.25	3.50	3.50	3.50
W. Va. screenings.....	Cincinnati...	4.10	1.10	1.10	.75@ 1.00	Kansas screenings.....	Kansas City..	2.60	2.60	2.60	2.25
Hooking lump.....	Columbus....	5.25	3.10	3.10	3.00@ 3.25						
Hooking mine run.....	Columbus....	3.50	1.95	1.85	1.75@ 2.00						
Hooking screenings.....	Columbus....	3.50	1.05	1.05	.90@ 1.00						
Pitts. No. 8 lump.....	Cleveland....	4.85	2.60	2.60	2.20@ 3.00						
Pitts. No. 8 mine run.....	Cleveland....	4.40	2.05	1.95	1.90@ 2.00						
Pitts. No. 8 screenings.....	Cleveland....	4.05	1.25	1.15	1.05@ 1.20						
* Gross tons, f.o.b. vessel, Hampton Roads.											
† Advances over previous week shown in heavy type, declines in italics.											

* Gross tons, f.o.b. vessel, Hampton Roads.

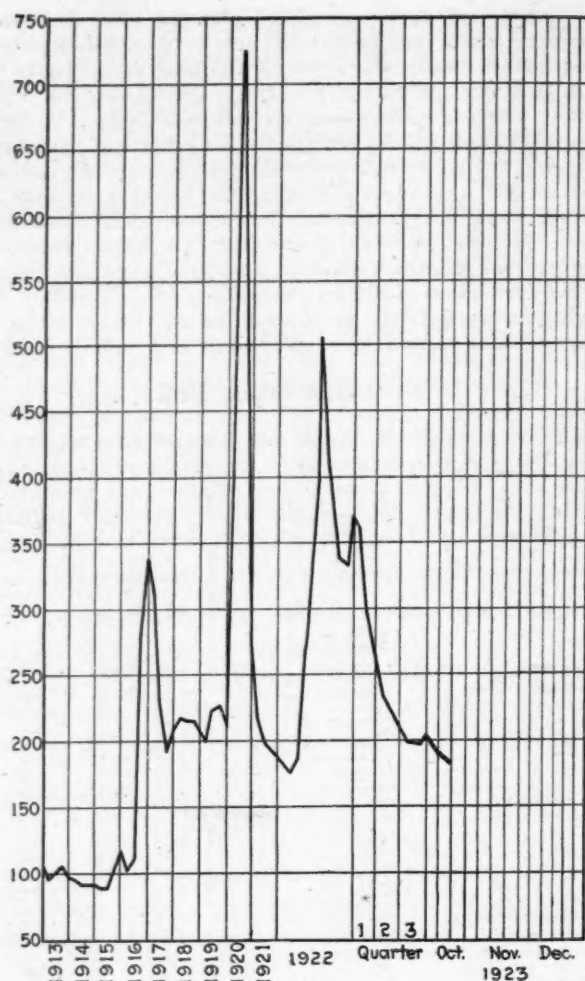
† Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Freight Rates	Dec. 26, 1922		Oct. 1, 1923		Oct. 8, 1923†	
		Independent	Company	Independent	Company	Independent	Company
Broken.....	New York....	\$2.34	\$9.00	\$7.75@ \$8.25	\$9.60@ 12.25	\$8.00@ \$9.25	\$8.00@ \$9.25
Broken.....	Philadelphia..	2.39	.....	7.90@ 8.10	.....	.....	.....
Egg.....	New York....	2.34	9.25@ 12.00	8.00@ 8.35	9.85@ 12.25	9.85@ 12.25	8.75@ 9.25
Egg.....	Philadelphia..	2.39	9.25@ 11.00	8.10@ 8.35	9.85@ 12.20	8.75@ 9.25	8.75@ 9.25
Egg.....	Chicago....	5.06	12.50@ 13.00	7.20@ 8.25	9.60@ 12.50	8.00@ 8.35	8.00@ 8.35
Stove.....	New York....	2.34	9.25@ 12.00	8.00@ 8.35	9.85@ 12.25	8.75@ 9.25	8.75@ 9.25
Stove.....	Philadelphia..	2.39	9.25@ 11.00	8.15@ 8.35	9.85@ 12.20	8.90@ 9.25	8.90@ 9.25
Stove.....	Chicago....	5.06	12.50@ 13.00	7.35@ 8.25	9.60@ 12.50	8.00@ 8.35	8.00@ 8.35
Chestnut.....	New York....	2.34	9.25@ 12.00	8.00@ 8.35	9.85@ 12.25	8.75@ 9.25	8.75@ 9.25
Chestnut.....	Philadelphia..	2.39	9.25@ 11.00	8.15@ 8.35	9.85@ 12.20	8.90@ 9.25	8.90@ 9.25
Chestnut.....	Chicago....	5.06	12.50@ 13.00	7.35@ 8.35	9.60@ 12.50	8.00@ 8.35	8.00@ 8.35
Range.....	New York....	2.34	.....	8.25	.....	9.00	9.00
Pea.....	New York....	2.22	7.00@ 11.00	6.15@ 6.30	6.75@ 7.50	6.15@ 6.65	6.15@ 6.65
Pea.....	Philadelphia..	2.14	7.00@ 8.00	6.15@ 6.20	6.75@ 9.00	6.35@ 6.60	6.35@ 6.60
Pea.....	Chicago....	4.79	7.00@ 8.00	5.49@ 6.03	6.00@ 6.75	5.40@ 6.05	5.40@ 6.05
Backwheat No. 1.....	New York....	2.22	4.00@ 5.00	4.00@ 4.10	2.65@ 3.50	3.50	3.50
Backwheat No. 1.....	Philadelphia..	2.14	5.00	4.00	3.00@ 3.50	3.50	3.50
Rice.....	New York....	2.22	3.00@ 3.25	2.75@ 3.00	2.15@ 2.50	2.50	2.50
Rice.....	Philadelphia..	2.14	2.50@ 2.75	2.75@ 3.00	2.00@ 2.50	2.50	2.50
Barley.....	New York....	2.22	1.75@ 2.00	1.50@ 2.00	1.15@ 2.50	1.50	1.50
Barley.....	Philadelphia..	2.14	1.00@ 1.75	2.00	1.50	1.50	1.50
Birdseye.....	New York....	2.22	.....	2.10	1.60	.....	1.60

* Net tons, f.o.b. mines.

† Advances over previous week shown in heavy type, declines in italics.



Index	1923				1922
	Oct. 8	Oct. 1	Sept. 24	Oct. 9	
Weighted average price	190	196	200	330	
	\$2.30	\$2.37	\$2.42	\$4.60	

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

situation in St. Louis is typical of that in all the surrounding territory in a retail way. Coke, anthracite and smokeless go begging. The number of oil burners put in this autumn has seriously affected the retail coal situation. Many householders are putting in gas heating plants.

All Kentucky Sizes Drag

It is admitted in Kentucky coal circles that demand is poor, and that a strike or severe car shortage or something like that would be necessary to start a buying movement or advance the price. All sizes in all fields of the state are reported as draggy. The retailers are contented to hold out and buy only for immediate needs.

The Lake movement continues heavy and this along with such general business as is in the hands of eastern Kentucky mines is resulting in overproduction of screenings, as industrial consumers appear to understand the situation fairly well and are refusing to buy screenings except at give-away prices. The very best grades of eastern Kentucky screenings are quoted at 75c. @ \$1 a ton at mine, while western Kentucky on pea and slack is quoting as low as 50c., and on nut and slack at around 90c. Mine-run also is draggy and runs from \$1.50 for off-grade stuff in eastern Kentucky to \$2.25 for the very finest gas coal, and from \$1.50 to \$2 in western Kentucky. Prepared sizes are being

held fairly firm in price. To reduce them with the screenings market as it now is would result in losses all along the line.

Northwest Idles Along

Coal demand throughout the Northwest was not much improved during the past week. No cold weather has struck in yet. The main interest in fuel in that general region centered on the increase in hard-coal prices, which varied from 65c. to 80c. on the standard domestic sizes and 10c. on pea.

New anthracite is coming into Duluth 75c. higher on egg, 70c. on stove and nut and 10c. on pea. Only two cargoes have been received during the week but sixteen more are reported on the way. Dock prices are: Egg, \$13.25; stove and nut, \$13.50; pea, \$11.10 and buckwheat, \$8.50.

Duluth prices on bituminous lump, run of pile and screenings, are:

Kentucky, \$7.50, \$7 and \$4.50; Youghiogheny, \$6.50, \$5.50 and \$4; Hocking, \$6.25, \$5.25 and \$3.75; splint, \$7, \$6 and \$4.25, and Pocahontas, \$10, \$6.50 and \$6.

All Milwaukee dealers are selling larger sizes of hard coal at advances ranging from 65c. to 80c. Stove is \$16.80; nut, \$16.65 and egg, \$16.40. Pea is up 10c. to \$14.30 and buckwheat is unchanged at \$11.50. These prices went into effect Oct. 4. Trade had been a bit unsteady before the advance because of doubt as to whether stocks on hand would advance too. They did. Demand for hard coal in Milwaukee is only fair and steam coal call has been light indeed. There has been considerable yield in price in competition between Western and Eastern coals.

Milwaukee wholesale prices on lump, pile run and screenings effective Oct. 4 are: Pittsburgh, Hocking and Youghiogheny, \$7.75, \$7 and \$6.25; West Virginia, \$8, \$7.25 and \$6; Pocahontas, \$12.50, \$8.50 and \$7.50, smithing, \$8.75; Kanawha gas mine-run, \$7; Illinois and Indiana, \$7.75, \$7 and \$6.25; coke, large sizes, \$14.90; pea and nut, \$11.90.

Western Trade Picks Up

Domestic demand throughout most regions of the West has been enough during the past week to justify an increase of 50c. in price. This applies to Kansas lump and Utah lump principally. Steam demand continues slow, however, and everywhere there are no bills in profusion. New Kansas prices drop screenings from \$2.50 to \$2.25 in a move to reduce the "no bills." There are no changes in Colorado prices. About 43 per cent of the production of the state was shipped out of the state during September.

Dullness Pervades Ohio Markets

Dullness characterizes the coal market around Columbus and as householders are not buying, retail business is quiet. Steam trade also is dull and the market on the whole is in as bad shape as at any time during the summer. Users are asking for the fancy grades such as smokeless and splints, and Kentucky grades also are being sold to a certain extent. Reserves are sufficient for from forty-five to sixty days. Railroads continue to take a fair tonnage and utilities are good buyers. The Southern Ohio Coal Exchange reports that for the week ended Sept. 22, 442 mines reported a production of 188,452 tons out of a total capacity of 695,630 tons.

Demand is generally dull in the eastern Ohio market, while steam buyers have at least thirty days' supply on hand. Retail yards report that domestic business is not as active as it was several weeks ago, but apartment houses and business buildings are stocking up to meet their obligations to furnish heat early this month.

Reports received at Cincinnati show that the efforts of the Logan County (W. Va.) producers to cut their wage scales has met with failure, but that some operators in Bell and Clay Counties, Kentucky, were more successful, although the cut was not large. A large amount of coal has been rejected during the past week or ten days. Bituminous and smokeless domestic coals are holding firm, while steam grades are weak. West Virginia 2-in. lump was quoted at \$2.25 @ \$2.50 on the Cincinnati market, with southeastern Kentucky 2-in. lump at \$2.25 @ \$2.75.

Further Slump at Pittsburgh

The market at Pittsburgh has slumped further and prices have gone below last July's level. It is difficult to sell coal, consumers showing no interest, the most conspicuous class being the steel mills and the shops that use steel. Steel interests are inclined to decrease their stocks of coal at by-product coking plants rather than increase them. The central Pennsylvania market is dull and there has been a noticeable drop in production, the total output for September having been 67,790 cars, as compared with 80,361 cars in August. Buffalo reports a quiet market. There is no demand and no indications of improvement.

New England Market Slow

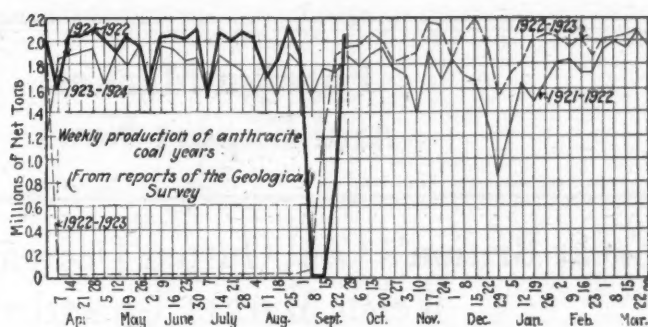
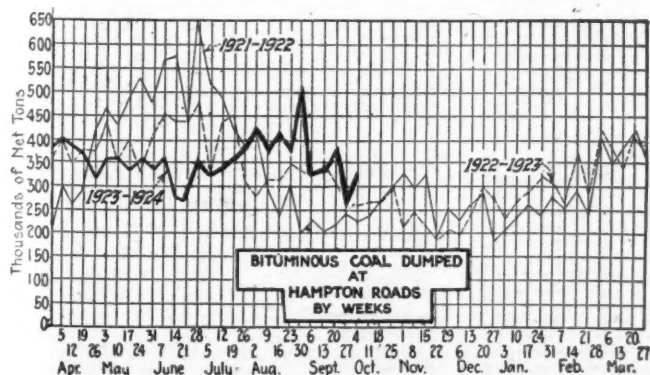
In New England the steam-coal trade might be considered even duller than in July if that were possible. Inquiry is of the most fugitive and elusive kind, and there are no indications of improvement. Not only is spot buying practically stopped but contractors are curtailing their receipts to correspond with reduced consumption. The largest textile mill of the world, for instance, at Manchester, N. H., has announced a shutdown in its cotton department, to continue for an indefinite period, and it is likely that this move will be followed by other manufacturers in the same line. Mill owners now see no prospect of anything like full-time production for a long way ahead.

Neither all-rail nor by water is there any volume of steam coal moving. Efforts to force coal on reluctant buyers have resulted disastrously to the shipper and few contractors have the hardihood now to send coal forward in advance of sale. Prices are depressed as low as the operators feel they can possibly go and pay their charges. In every direction the market is being combed over in the hope of developing enough business to warrant keeping the mines open at least a day or two a week. We are in the midst of the fall season with possible transportation troubles ahead, but consumers show no interest, largely because they have reserves on hand for three to four months.

There are rumors of prices f.o.b. Norfolk and Newport News of No. 1 Navy standard grades at less than \$4.75 per gross ton, but they are not substantiated. Accumulations at the piers are as heavy as can be allowed under the conditions and several of the smokeless agencies are following an extremely close-hauled policy of restricting shipments from the mines to replacements of coal actually dumped at the piers. At this end Pocahontas and New River have sold at less than \$6 per gross ton on cars at Boston and at Providence. These quotations are confined for the most part to wholesale dealers who have storage of their own and are not obliged to move tonnage in order to save car service or vessel demurrage.

Atlantic Seaboard Markets Inactive

There is little activity in the New York soft-coal market. Spot demand is slow and contractors are asking that their deliveries be reduced. It was reported that some operators had voluntarily reduced their contract prices in order to keep the coal moving. Many operators do not look for any considerable improvement before the new year, when consumers are expected to begin to build up reserve stocks before negotiations for a new wage agreement in the bituminous regions begin. There was some interest taken



in the opening of bids by the U. S. Shipping Board on Oct. 4 for 2,300 gross tons of Pool 9 coal, at which the prices submitted ranged on a basis of \$1.65@2.36 per net ton, f.o.b. mines. The Philadelphia market is quiet, the only activity being efforts to keep the stop tonnage on the move. There are numerous inquiries for protection on blocks of tonnage, and while some are willing to give protection to the end of March, the disposition is to sell blocks for about three months ahead.

At Baltimore there is some inquiry from industries which store large tonnages for the winter months. With car supply liberal, the movement of coal is in excess of any urgent demand. The activity in West Virginia is spotty, although production has not been affected materially. Due to the weakness of smokeless coals at tidewater, shipments are being made to Western markets whenever it is possible, owing to better prices prevailing and stronger demand. The market at Birmingham is quiet, with a restricted demand and sharp competition.

Dumpings for Lake movement during the week ended Sept. 30 amounted to 836,790 tons of cargo and fuel coals as compared with 878,058 tons the previous week. Although two months of open navigation still remain, dumpings of cargo coal have declined perceptibly in the past month, but this is not surprising, says the Geological Survey, as on Sept. 30 the cargo coal dumped the present season amounted to 22,061,001 tons, 1 per cent greater than the shipments in 1918, in which year the maximum Lake shipments occurred. During the same week 33,757 tons of anthracite was dumped at Buffalo for lake shipment, bringing the total for the year up to 2,168,576 tons.

Domestic Anthracite Moving Well

Movement of anthracite domestic sizes continues in good volume although dealers along the Atlantic seaboard could use large shipments. Not much of the high-priced coals come to the New York market, retail dealers there depending mostly on company product. Light shipments are complained of also in the Philadelphia market. Stove and chestnut sizes are mostly wanted, while the demand for egg and pea coals is on the increase. Baltimore complains of small shipments. The steam sizes move slowly. Buckwheat is being quoted by independent producers at prices below the company schedule of \$3.50. The strongest of the three coals is barley, but even this is being let go at less than company schedules.

It is hard to sell coke either for heating purposes, for blast furnace use or for foundry use, and prices show a further decline from last week. Standard furnace coke is quotable around \$5.50, while heating coke is being quoted in the Connellsville district at around \$3.75. Production of beehive coke during the week ended Sept. 29 is estimated by the Geological Survey to have been 321,000 net tons, a decline of 14,000 tons from the previous week.

Car Loadings, Surpluses and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Sept. 22, 1923.....	1,060,436	182,524
Previous week.....	1,060,580	171,830
Same week in 1922.....	961,138	187,204

	Surplus Cars		Car Shortage	
	All Cars	Coal Cars		
Sept. 22, 1923.....	59,008	16,840	13,515	5,482
Same date in 1922.....	11,292	7,018		
Sept. 15, 1923.....	69,080	19,790	12,245	6,478

Foreign Market And Export News

Great Britain's Coal Output Decreases Slightly; Welsh Market Unsettled

Production of coal by Great Britain's mines during the week ended Sept. 22 was 5,005,000 tons, says a cable to *Coal Age*. This compares with 5,245,000 tons the previous week, a decrease of 240,000 tons.

The Welsh market continues unsettled. The tone has been disappointing to the operators, who expected some increased demand from the United States. In addition, the European buyers have adopted a waiting policy and orders for the remainder of the year are anything but heavy. Belgium and Holland continue to buy steadily but not in large quantity, while the business with South America is very quiet.

Owing to the accumulation of stocks operators in many districts are finding great difficulty in getting their railway trucks cleared, and some mine stoppages have resulted. A few mines are favorably placed and have not reduced their prices, but there is such keen competition for business that buyers have been able to force concessions.

Operators are looking forward to the placing of the British Admiralty contracts, which is expected soon.

The Newcastle market is distinctly quieter, though operators are able to clear their outputs, and there is not much accumulation. The European demand is very slack, particularly that from Germany.

French Market Firm; Inquiry Drops

The French coal market is still firm. Due to the new turn in events in the Ruhr, inquiry for industrial coal has slightly declined. However, the market probably will become more active owing to the usual last-minute rush of retailers to take advantage of the summer prices. In spite of the difference in prices between the French collieries' rates and their foreign competitors it is asserted that no adjustment in prices will be made in the near future.

Belgian producers are considering the Paris market with more interest since their government intends to curb the

overexportation of fuels to other countries, especially to Holland and Switzerland.

Union Enters Retail Market at Norfolk

The Brotherhood of Locomotive Engineers, through their representatives at Norfolk, are offering Pocahontas coal at \$7.50 a ton, delivered in the homes. The coal is being sold at \$6 a ton at the car. It is of a somewhat lower grade than the coal being sold by local dealers for \$12 a ton, having been screened finer than the usual commercial product.

Business at Hampton Roads was slack last week in the face of a declining market, prices weakening and movement of coal showed a decline. Dumpings at all piers were below normal, and movement of coal in all directions was without feature.

Coastwise trade was the strongest, though somewhat below normal for this period of the year. Foreign business was holding its own, and showing no indication of an immediate improvement. Bunkers dropped somewhat, due to a temporary slump in general shipping. The tone of the market was dull, and a spirit of comparative inactivity was manifest in the trade.

United States August Coal and Coke Exports

	1922	1923
Anthracite.....	28,704	442,475
Bituminous.....	425,530	2,117,084
Exported to:		
France.....		85,543
Italy.....		46,857
Netherlands.....		76,128
Other Europe.....		40,225
Canada.....	373,589	1,753,972
Panama.....	9,595	
Mexico.....	6,052	6,357
Br. W. Indies.....	15,730	12,571
Cuba.....	10,629	46,807
Other W. Indies.....	7,899	6,707
Argentina.....		7,730
Brazil.....		7,411
Chile.....		
Egypt.....		4,000
Fr. Africa.....		13,123
Other countries.....	2,036	9,653
Coke.....	26,121	99,237

United States August Coal and Coke Imports

	1922	1923
Anthracite.....	31,574	588
Bituminous { free.....	770,332	6,028
dutyable.....		58,344
Totals.....	770,332	58,344
Imp. from:		
United Kingdom.....	506,050	
Canada.....	228,044	58,344
Japan.....	50	
Australia.....	35,519	
Other countries.....	669	
Coke.....	5,240	3,162

Export Clearances, Week Ended Oct. 6, 1923

FROM BALTIMORE	
For France:	Tons
Fr. SS. Capitaine Boudouin.....	6,028
Fr. SS. Hudson.....	473
For Canada:	
Belg. SS. Caledonier.....	6,170
For Dutch Guiana:	
Am. Sch. Esther K.....	1,177
For West Coast Ports:	
Am. SS. Mount Carrol.....	2,000
COKE	

For Chile:	
Jap. SS. Atlantic Maru.....	3,518

FROM PHILADELPHIA	
For Cuba:	
Am. Sch. Wm. H. Harriman, for Cienfuegos.....	

FROM HAMPTON ROADS	
For Canada:	
Belg. SS. Menapier, for Montreal.....	6,905
Dan. SS. Bornholm, for Bathurst.....	1,207
Br. Sch. Peter McIntyre, for St. John.....	793
For Cuba:	
Nor. SS. Almora, for Havana.....	3,544
For West Indies:	
Dan. SS. Nordkap, for Fort de France.....	4,995
Dan. SS. Norden, for Barbados.....	4,097
For Italy:	
Ital. SS. Nomentum, for Porto Ferrajo.....	6,094
For Brazil:	
Br. SS. Eastern City, for Pernambuco.....	7,681
For Porto Rico:	
Amer. SS. Jean.....	4,009

Hampton Roads Pier Situation

N. & W. piers, Lamberts Pt.:	Sept. 27	Oct. 4
Cars on hand.....	1,282	1,350
Tons on hand.....	69,763	77,111
Tons dumped for week.....	68,333	86,709
Tonnage waiting.....	7,400	22,800

Virginian Ry. piers, Sewalls Pt.:		
Cars on hand.....	1,762	1,890
Tons on hand.....	106,150	112,050
Tons dumped for week.....	97,720	84,158
Tonnage waiting.....	7,110	10,958

C. & O. piers, Newport News:		
Cars on hand.....	2,240	1,899
Tons on hand.....	118,675	99,975
Tons dumped for week.....	63,170	118,502
Tonnage waiting.....	2,750	6,800

Pier and Bunker Prices, Gross Tons

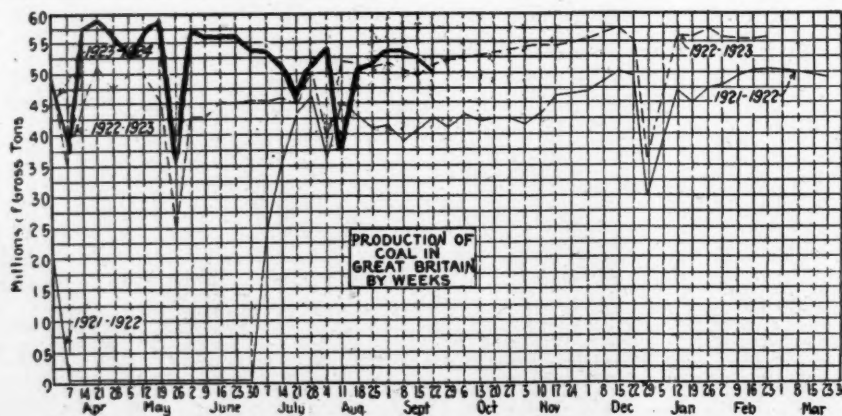
PIERS		
	Sept. 29	Oct. 6†
Pool 9, New York.....	\$5.15@ \$5.50	\$4.95@ \$5.35
Pool 10, New York.....	4.75@ 5.00	4.50@ 5.00
Pool 11, New York.....	4.35@ 4.75	4.35@ 4.75
Pool 9, Philadelphia.....	5.30@ 5.60	5.30@ 5.55
Pool 10, Philadelphia.....	4.65@ 5.20	4.55@ 5.10
Pool 11, Philadelphia.....	4.35@ 4.70	4.30@ 4.65
Pool 1, Hamp. Roads.....	4.99@ 5.00	4.60@ 4.75
Pools 5-6-7 Hamp. Rds.	4.50	4.40
Pool 2, Hamp. Roads.....	4.60@ 4.70	4.40

BUNKERS			
Pool 9, New York.....	5.45@	5.80	5.25@ 5.65
Pool 10, New York.....	5.05@	5.30	4.80@ 5.30
Pool 11, New York.....	4.65@	5.05	4.65@ 5.05
Pool 9, Philadelphia.....	5.60@	6.00	5.55@ 5.95
Pool 10, Philadelphia.....	5.10@	5.50	5.00@ 5.40
Pool 11, Philadelphia.....	4.65@	5.00	4.60@ 4.90
Pool 1, Hamp. Roads.....	4.90@	5.00	4.75
Pool 2, Hamp. Roads.....	4.60@	4.70	4.40

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to Coal Age		
	Sept. 29	Oct. 6†
Admiralty, large.....	28s.	27s.6d. @ 28s.6d.
Steam smalls.....	20s.	17s.6d. @ 18s.6d.
Newcastle:		
Best steams.....	24s.	24s.
Best gas.....	24s. @ 24s.6d.	24s. @ 24s.6d.
Best bunkers.....	21s.6d. @ 22s.	23s. @ 24s.

† Advances over previous week shown in heavy type, declines in italics.



News Items From Field and Trade

ALABAMA

The sale of the federal government's interests in the Gorgas steam plant, the initial units of which were constructed by the Alabama Power Co. and turned over to the Government under contract for use during the world war, the plant being greatly enlarged and expanded by the War Department, has made public a claim of H. E. McCormick, a prominent coal operator of the Birmingham district, to one-half ownership in the lands on which the plant is located, which promises to bring the legality of the contract under which the government's interest in the property was transferred to the power company for a sum approximating \$3,500,000, into question with a probability that the transaction will be aired in Congress at its next session or taken into the courts for adjudication. The McCormick interests claim that their half interest in the property was never acquired by the power company while the latter claims a perfect title to the property involved. The matter is of much interest in view of the fight of Henry Ford for the Muscle Shoals plant, in which Mr. Ford has persistently declined to eliminate the Gorgas steam plant from his bid for the government properties. The Gorgas plant is located in Walker County on the Black Warrior River and is supplied with coal from the mine of the Winona Coal Co. The lands carry the Pratt and America coal seams and are valuable holdings.

J. E. Creel, operating the Town Creek mine in Walker County, near Empire has sold the operation to Elmer Faucett, of Dora, for a consideration said to approximate \$10,000. Mr. Faucett will continue the mine in operation.

The Legislature of Alabama has passed an act increasing the salary of the chief mine inspector and his five assistants \$1,000 each and carrying an appropriation of \$50,000 per annum for the work of the mining department of the state, which practically doubles the fund formerly available and will enable the department to render more extended and effective service in the coal mining industry. The bill will doubtless receive the approval of the governor.

Announcement is made of an increase in the capital stock of the Rushton Coal Corporation of \$374,000 and a change in the name of the corporation to the Rushton Corporation. J. Frank Rushton is president; R. H. Woodrow, vice-president and general manager; William J. Rushton, secretary, and J. S. White, treasurer, all of Birmingham. The Rushton interests are now operating the Franklin Mining Co., at Powhatan, in the western section of Jefferson County, and the Piedmont Coal Co., in Walker County, near Dora. Although no official announcement has been made of the plans of the corporation the large increase in capital will more than likely be used for extensive development work.

The McLaughlin Coal Co. has purchased the retail coal business of the Empire Fuel Co. in Birmingham.

ILLINOIS

Considerable publicity is given in the St. Louis press to the suggestion of William D. Pratt, an engineer of Kansas City, that the economical method of conveying coal to St. Louis for steam plants is to reduce it to a small size and pump or flush it from a central mining point a few miles from St. Louis to the city, utilizing the Free Bridge to cross the river. A right of way across East St. Louis would be necessary, but this is solved by a new ordinance of the St. Louis board of aldermen passed over the mayor's veto and in opposition to the combined interests of the St. Louis railroad monopoly with its 29c. per ton "arbitrary" on coal, appropriating several thousand dollars for condemnation of a right of way for the north-east approach for the Free Bridge elevated over the city of East St. Louis, as the first step to free St. Louis from the "arbitrary." This approach could be used for coal from the mines in Madison, Macoupin and adjoining counties and the northern section of St. Clair County. Practical engineers discussing it agree that conditions at St. Louis are better for this than elsewhere at this time for this first step in the economic delivery of steam sizes, which are losing

out to oil and electricity on account of high producing costs, coupled with high freight rates and the river "arbitrary."

The leasing of 1,500 acres of coal land within a few miles radius of Elkhart has been announced, John Fox being the promoter, acting for a large Eastern company, according to statements published. It is further stated that this company owns and operates 17 large mines in Virginia and that they will soon commence drilling operations on the land near Elkhart. The vein at that point averages from 8 to 12 ft. thick and at a depth of about 300 ft.

The Illinois Central R.R. is contemplating the reconstruction of its coal chutes at the mine of the Jackson Coal Co. at Haildayboro, which were destroyed by fire some time back.

The two mines at Buckner and Weaver will again operate according to announcements by owners. The two plants have been idle for several months.

Final surveys and plans have about been completed at the proposed site of the new strip mine to be opened by the Equitable Coal & Coke Co., at Du Quoin. Engineers of the company have been working on the location for some time and it is expected that work will be started on the switch soon. Strip mining in this particular district has gained much popularity, this being the third operation to be opened within five years. The other two are the Harts-horn Coal & Mining Co., at Elkhart, and the Scott, Smith Coal Co., at Du Quoin.

INDIANA

Joseph T. Kingsley, district manager of the Binkley Coal Co., was appointed receiver for the Active Coal Co. by Superior Judge T. J. Moll, Indianapolis, recently. The proceedings were filed by the Union Fuel Co. on alleged failure to redeem a promissory note. Liabilities were listed at \$7,000. The company will not be sold until contracts now on the books are filed, it was said.

Gray Brothers, who are leasing coal land in Monroe and Lockhart townships, Pike County, the last week recorded fifty options on coal lands covering nearly 2,000 acres. Most of the land is optioned at \$100 to \$125 an acre. The Gray Brothers are rushing work on their railroad, being built from the Big Four R.R., just south of Oakland City. As soon as the road is completed three big strippers will be shipped into southern Monroe townships, where the Gray Brothers own one of the largest stripping coal fields in the Middle West.

A suit against the state, said to be the forerunner of a series of suits to recover more than \$150,000 in tonnage and license fees levied against Indiana coal operators by the State Coal and Food Commission during the 1920 fuel famine, was filed in the Indianapolis Superior Court recently by the Spring Valley Coal Co., of Greene County. The return of \$854 is sought. The commission was created by special act of the General Assembly, while James P. Goodrich was Governor, to expedite coal deliveries and regulate prices. It was composed of Mr. Goodrich, Jesse Eschbach, ex-chief examiner of the State Board of Accounts, and Otto L. Klaus, ex-Auditor of State. Expressing the opinion that the act was for "revenue producing purposes," the complaint avers the measure was in conflict with interstate commerce regulations and violated sections of the state and national constitutions. A hearing likely will be held in December before Judge Clinton H. Givan.

The property of the Domestic Coal Co., located a few miles southwest of Washington, on the Maysville road, was sold recently by the owners, Hugh L. Cox and Sheriff Hugh G. Faith, to William T. Enley and James Duese, both of Edwardsport, and Dr. Ernest Hollingsworth, of Washington. Title to a 238-acre farm east of Washington on the state highway No. 5, passed to Cox and Faith by the terms of the transaction. The land belonged to Enley. The Domestic Coal Co.'s mine has been in operation for three years. The new owners were given immediate possession.

At an approximate investment of \$25,000 the Bloomington Coal Co., Bloomington, has erected a new elevator, conveyor and

overhead pocket system for the handling of coal. The building is 105 ft. long, 24 ft. wide and 50 ft. high. A driveway in the center runs the entire length and is so arranged that loading wagons or trucks can drive in at one end and out at the other.

The Hoosier Coal Mining Co. has been incorporated at Dugger, with a capital of \$30,000 to carry on the business of mining. Roy E. Price, of Indianapolis, and Harry T. West, Irwin Coffey, Everett King, James Reeves and B. P. Tison, of Dugger, are the incorporators.

KANSAS

The Southwestern Interstate Coal Operators' Association and the United Mine Workers of District 14 after long negotiations, which apparently broke off in a disagreement, resumed conference and made a machine mining scale for the Pleasanton field, Linn County, which provides a 10c. differential from the pick scale. William Bogartz, district union president, on Sept. 24, a week after the agreement was made, gave a signed statement to Pittsburg newspapers that he was continuing to publish in the newspapers of that city, the center of the Kansas coal field, a warning to union miners to stay away from Pleasanton. He said only four Pleasanton companies have signed up and many miners living there are unable to get employment. No effort has been reported recently to resume negotiations for a machine scale for all of District 14 since the conference handling that matter adjourned many weeks ago without reaching an agreement.

Charging that fifteen years ago the Mackie Fuel Co. removed coal from under 3.49 acres of land belonging to the Western Coal & Mining Co. in the Cherokee County (Kansas) field, the latter company has brought suit for \$100,260.87 against the former directors of the now extinct firm in Federal District Court at Fort Scott. George K. Mackie, Flora Mackie, Eva Bush and Mrs. J. W. Mackie are named as former directors of the company and as statutory trustees for the stockholders since the dissolution of the corporation. In its petition the complainant says the alleged trespass was not discovered until recently, when men in its mine No. 21 cut through into the old workings of the Mackie mine. The total amount of coal removed is estimated at 11,242 tons, valued at \$14,400. The Western company is demanding \$43,200 for this coal, under the rule that treble value may be collected for coal removed by encroachment. To the \$43,200 is added \$38,000, accumulated interest. The remainder of the \$100,260.87 is demanded on the ground that the Mackie workings created a danger zone for Western mine No. 21, making it impossible for that concern to obtain men to work 16.39 acres of its holdings.

KENTUCKY

New methods of arriving at an equitable assessment of Kentucky coal properties went into effect July 1. Heretofore coal operators have lumped their assessments in many instances, but under the new system an itemized report will be made of all mining equipment and houses, tipples, buildings, etc., owned by the mining companies. This system is expected to bring to light much hitherto unlisted property and it will require the operators to pay the tax on separate items rather than in a lump valuation.

At least three mines near Madisonville, in Western Kentucky are still on strike following the failure, last summer, of the men to sign the two-year contract which the balance of the field made. About \$6,000 a week in strike benefits is now being paid to these strikers by the union.

David R. Ogden, of Louisville, formerly in the coal jobbing and operating business, has arranged to become local representative of the Crown Coal Co., Inc., selling agents for mines at Centertown and also the Rockport Coal Co., at Rockport, the Crown having mines on both the Louisville & Nashville and Illinois Central railroads.

The Bell Dean Coal Co., Louisville, has filed amended articles increasing its capital stock from \$11,000 to \$25,000, the amendment being filed on June 25.

Amended articles have been filed by the Delaware Coal Co. of Davies County, increasing its capital stock from \$60,000 to \$150,000.

The Drakesboro Coal Co., of Drakesboro, in western Kentucky, has been incorporated with a capital of \$40,000, by Claude Nichols, of Mogg, Edgar Nichols, of Central City, and A. J. Mercer, of Martwick.

The Falls City Coal Co., of Louisville, capital and liability limit each placed at \$10,000, has been chartered by Charles

Baumeister, Wilson H. Harcourt and John Herdt.

The E. T. Silder Co., handlers of river coal, sand and gravel, at Louisville and New Albany, have installed three new steel barges in their river service, and have three more coming, the equipment having been built at the Howard Shipyards plant, at Jeffersonville, Ind.

The United Mine Workers of District 23 have been denied an injunction to prevent the Dever Coal Co., of Webster County, from leasing its property to another concern, not a signer of last summer's two-year contract with the miners. Chief Justice Sampson in the Kentucky Court of Appeals said the court had no jurisdiction in such a matter.

The Louisville & Nashville R.R. reports that it has virtually completed work on additional yards at Strawberry, adjoining the South Louisville yards, which will give it capacity for several hundred additional cars at Louisville and improve facilities for switching and handling. Ten acres of land are taken up by the new yards, which cost over a quarter of a million dollars. A half million dollars also is to be expended in reducing grade and curves over Coal Hill, forty miles south of Louisville, on the main line to the western Kentucky coal fields, and to Nashville and the South.

The Inland Waterways Co., Louisville, has just purchased an additional steam towboat from the Ayer & Lord Tie Co., at Paducah, and has announced plans for maintaining regular schedules in handling tows of coal, oil and steel products between Louisville and upper river points, as far as Pittsburgh.

The Liggett Mining Co., Cincinnati, with mines at Dakota, near Whitesburg, has resumed operations after being down for several months.

Operations have been started to put the New Castle mine of the New Castle Coal Co., at Edwardsville, which has been idle since last March, in condition to resume work soon. The pumps have been started.

The Eagle Coal Mining Co. has been incorporated in Oliver Springs, Minn., with a capital of \$25,000, by J. E. Wood, J. H. Hodges and W. A. Montgomery.

The Enterprise Coal & Mining Co., of Sullivan, has filed a preliminary certificate of dissolution.

MINNESOTA

Governor Preus, of Minnesota, has returned a pointed response to Governor Pinchot's letter urging an investigation of the possibilities of profiteering in the Minnesota coal trade. This was investigated a year ago by Colonel Ivan Bowen, of the State Railroad and Warehouse Commission. His conclusions are that with one or two minor exceptions, there was no profiteering in the Minnesota coal trade. So Governor Preus invites Governor Pinchot to the situation at home, suggesting that it is unfortunate that there should be permitted connivance in Pennsylvania by the operators, railroads and miners of anthracite whereby the price of anthracite is forced up. He declares that "certain classes of people" of Pennsylvania are now taking unfair advantage of the consumers of anthracite throughout the United States and Canada.

A new screening plant has been installed at Two Harbors. It will be used by the Duluth and Iron Range Ry. and will handle 150 tons an hour and cost \$90,000. It is electrically operated.

MISSOURI

In the U. S. District Court at St. Louis recently Judge Faris rendered a decision in favor of the Burton Coal Co., of Chicago, formerly known as the Wickham & Burton Coal Co., for \$19,330.80, against the Boehmer Coal Co., of St. Louis. The plaintiff sued for damages on a contract for 100 cars of coal made on April 19, 1920, and on which 22 cars were shipped. The defendant refused to ship any more, claiming car shortage. The plaintiff showed that the cars were delivered and the market price increased, and the Court sustained that view.

The Centerville Coal Co., of Centerville, Iowa, have taken over the property of the Mosby Coal Co., of Mosby, where, it is understood, the shaft enters a 32-ft. seam of coal, but it has not been worked successfully on account of quick sand.

NEW YORK

Raymond A. Walter and Walter M. Dake, former members of the staff of the U. S. Coal Commission, will establish an office as

consulting engineers in New York. As a representative of Chairman Hammond, Mr. Walter made investigations of mining communities while Dr. Dake was an assistant to C. E. Leshner in engineering studies made under direction of the Commission.

A fuel dictator, with full powers, was urged by the Flatbush Civic Association, members of which held their first fall meeting at Public School 119, Avenue K and East Thirty-ninth Street, Brooklyn, Oct. 3. A resolution was passed asking Governor Smith to appoint a coal commission to regulate prices and distribution. Members declared the coal situation in Brooklyn was "disgraceful," and argued that it had been clearly shown fuel administrators heretofore have not had sufficient power to stop profiteering or regulate supplies.

Michael Tuchs, president of the Titan Fuel Corporation, New York City, has returned from a two months' tour of Europe.

F. B. Layton Coal Co., of Boston, will hereafter represent the Steamship Fuel Corporation, of New York, in New England.

OHIO

In order to finance extension plans the Muskingum Coal Co., of Zanesville, has increased its capital to \$300,000. The company has obtained a contract to furnish coal to the new \$10,000,000 power plant being erected at Philo, on the Muskingum River, which runs for about 10 years and which will eventually call for 50 cars daily. New mines will be opened and new leases have been obtained to increase its holdings.

The Gilt Edge Coal Co. has been chartered with an authorized capital of 600 shares, no par value, for the purpose of mining coal and for selling both coal and coke. Incorporators are John H. Smith, B. D. Smith, Charles A. McLaughlin, C. W. Arnold and Roy J. Stern.

Eleven mines of the Sunday Creek Coal Co., the George M. Jones Co., the Ohio Collieries Co. and the Caledonia Coal Co. have resumed operations near Corning after being practically shut down for the last three months. Fifteen hundred men are given employment.

Toledo's City Council has voted to make an investigation of the price of both anthracite and bituminous coal, the spread between wholesale and retail prices and whether there are any speculators in that city. The investigation, to be conducted by a committee of three, is to be concluded and findings reported not later than Dec. 1. The resolution recites that the report of the Hammond fact-finding commission found Toledo wholesalers were paying between \$12 and \$13 for a gross ton of anthracite, and that the retail price is between \$16 and \$17 a net ton. It also sets forth that the rail rates from the anthracite fields are lower to Toledo than to any other city in Ohio, although the retail price there is reported to be higher than in other cities.

The Maple Grove Coal Co., Columbus, will soon open a mine at Adena. Acreage has been obtained and it is proposed to open an electrically operated mine with an initial production of 400 tons daily. Walter Mulby, of Columbus, is at the head of the company, and E. C. Riley is general manager.

The Moore Fuel Co., of Columbus, is in the hands of a receiver. This caused the closing of their branch office which had been maintained for a few months in Cincinnati.

OKLAHOMA

The Wise-Buchanan Coal Co.'s mine immediately south of Henryetta was recently opened. This mine is one of the largest in the Henryetta district and affords employment for 100 miners. Its output is more than 800 tons a day. The mine has not been operated at capacity since it was opened, on account of lack of demand for coal. The company has held most of its miners, however, and expects to operate at capacity as soon as cold weather increases the demand for fuel.

PENNSYLVANIA

The anthracite tax cases reached the state Supreme Court at Pittsburgh on Sept. 26, when arguments were heard upon an appeal from the decision of the Dauphin County Court which had upheld the constitutionality of the Act of Assembly of May, 1921, fixing a tax upon anthracite. The Commonwealth of Pennsylvania is the plaintiff in the case with the Philadelphia & Reading Coal & Iron Co., Alliance Coal Mining Co., Cranberry Creek Coal Co. and the Lehigh Coal & Navigation Co. were

listed as defendants. Arguments of counsel centered upon the following points: Can a tax be assessed in accordance with the act of May, 1921, unless the tonnage and value is accurately ascertainable on the day it is prepared for shipment?; Was it lawful to assess the tax after the coal had been delivered to the carrier?; Was it lawful to assess the tax when the coal had no market value on the day the statute required the assessment to be made?; Does the assessment of the tax violate the uniformity clause of the state Constitution and the commerce clause and the fourteenth amendment of the federal Constitution?

Approximately 750 miners employed at the Delaware Colliery of the Hudson Coal Company at Plains went out on strike Oct. 1 because a laborer refused to pay a fine of \$25 imposed upon him by the officials of the local to which he belonged for a violation of a union ruling. The offender had agreed to pay the fine at a recent meeting of the local, but upon paying the money at the colliery he demanded a receipt, which was refused him. The company then was asked to take a hand in the matter, and upon refusing to do so the men went out, throwing the colliery idle.

Announcement has been made by the National Mining Co. that it will build the largest coal tipples in the world at the Ginger Hill Mine near Monongahela.

The fourth annual banquet and dance of the Bertha-Consumers Co. of Pittsburgh, held Sept. 29 in the Fort Pitt Hotel, was attended by nearly two hundred persons representing the operating, sales and city office personnel. John H. Jones, president of the company, made a brief address, following the dinner, in which he discussed efficiency, operation and salesmanship.

Evans, Sprague & Sturges, Inc., Pittsburgh, having been refused registration by Deputy Barford of the State Securities Commission, after a personal conference, are not satisfied with the decision and are exercising their privilege of appealing to the Common Pleas Court of Dauphin County to reverse the decision of the deputy. D. J. Evans, of the firm, says the company "are not stock jobbers of the 'get-rich-quick' order, as might have been inferred by the news item given out by Mr. Barford. It is a firm of repute, and has had numerous requests from business firms to assist them in new financing; but according to the ruling handed down are not in a position to contemplate entering into negotiations with any of these firms until they are registered."

The George B. Newton Coal Co., of Philadelphia, has declared a semi-annual dividend of 3 1/2 per cent on the first preferred stock, payable Nov. 1 to stock of record Oct. 15. This is the first dividend on the stock since 1915.

A state charter has been issued to the Sesler Coal Co., Uniontown, for mining coal and manufacturing coke; capital, \$30,000; treasurer, James T. Sesler, Uniontown. Incorporators: Philip Sesler, Uniontown; William H. Trader, Uniontown, and James Jeffrey, Oliphant Furnace.

The Kimberly Crest Coal Co., Somerset, has been incorporated, for mining and marketing coal and other minerals and its capital stock is \$50,000. Thomas Donohoe, Edgewood, is treasurer and the incorporators are the treasurer, T. M. Donohoe, Edgewood, and George W. Howell, Pittsburgh.

A charter has been issued to the Windber Standard Coal Co., Johnstown; mining, quarrying and producing fireclay; capital, \$151,500; treasurer, J. E. Graham, Johnstown. Incorporators: J. C. Congrove and H. J. Meehan, Johnstown, and John M. Miller, Indiana.

Governor Pinchot upon his return to Harrisburg from two weeks' seclusion at his Milford home announced that he intends to vigorously carry out his purpose to prevent gouging of anthracite coal consumers. The Governor emphasized that he is following the lines laid down at the conclusion of the anthracite settlement to regulate coal prices by supervision over freight rates and coordination of the state functions to check soaring prices. This was to be followed by concerted action of governors in anthracite-consuming states. He intimated that many of the governors addressed were sympathetic toward his proposition. Governor Pinchot called in Secretary Walsh of the Mines Department, Chairman Ainey of the Public Service Commission and Attorney General Woodruff as soon as he arrived. He said they presented to him results of their investigations as to the effects of the coal-strike settlement.

The George B. Newton Coal Co. pockets at 53d St. and Thomas Ave., Philadelphia, were badly damaged by fire recently.

Charles A. Johnson, president of the company, said that much of the hoisting machinery in the coal pockets, which cost \$125,000 to construct, probably would have to be replaced. Twenty thousand tons of coal in concrete bunkers was untouched by the flames.

In court in Somerset, Sept. 29, Michael Viscosky, Clement Acitelli, Michael Kulchek, John Lapata and Alfred Ramsell, all of Jerome, charged with having dynamited a bridge on the Jerome Branch of the B. & O. R.R., with the intent of preventing the shipment of coal from the mines of the Hillman Coal & Coke Co. mines to the main line of the railroad, were found guilty, after a trial lasting four days. William Gregory and Annuncio Pacifico, charged with complicity in the same affair, were discharged. John Goodisky, the other member of the gang alleged to have placed the charge of dynamite that threw the entire structure into the river, made a confession soon after his arrest and turned state's evidence. Judge Berkey has not indicated what action he will take with Goodisky. All the men charged with the dynamiting are miners who went on strike at Jerome in April of last year.

TEXAS

The State Board of Control has awarded contracts for the state's fuel supply for the next fiscal year, ending Sept. 30, 1924. The state will consume something like 25,000 tons of coal. Twelve months supply of lignite, which is used for fuel in many of the steam plants of the state, will be furnished by M. B. Shannon & Co., Dallas. Contracts for supplying most of the coal were awarded to the Southwestern Coal Co. of Dallas, and contracts for the rest of the coal supply were awarded to the Southern Coal Company, also of Dallas.

UTAH

The State Security Commission has permitted the Black Diamond Fuel Co., which has a government lease on 880 acres of coal land close to Clear Creek to sell 50,000 shares of its stock in Utah and 350,000 outside of Utah at par, \$1 a share, with the commission not to exceed 20 per cent and other costs not to exceed 5 per cent additional. The property, according to the engineers who investigated for the company, can be developed to a production of 500 tons a day at about 75 per cent of the average cost of such development. The commission throws special safeguards around the proposition in the way of escrowing the proceeds of the stock sales and retaining control until sufficient funds have been assembled to develop the mine properly. The coal is said to be a coking coal, low in sulphur content, and to rank in heat value with the very best of the Carbon County coals.

WEST VIRGINIA

Two new coal companies have been launched by H. P. Jones and others, one of them to be a coal agency and the other a mining concern. The first named known as the Harry P. Jones Sons Coal Co., was organized with a capital stock of \$50,000, with its main office to be at Huntington and the incorporators in addition to Mr. Jones were James R. Jones, W. U. Phillips, of Logans Ferry, Pa.; H. P. Jones, Jr., Ida M. Jones, of Huntington. The other concern is to be known as the Menniti Elkhorn Coal Co., also with headquarters at Huntington. Interested in this company are Samuel Menniti, George Vevacana, Samuel V. Suppa, Frank Alasci, of Charleston; H. P. Jones, of Huntington.

The Eccles and Sun mines in the New River field are now being operated by the Daniel B. Wentz interests, of Philadelphia, which acquired these mines late in July. Major W. P. Tams, one of the leading operators of the Winding Gulf region, also is interested. These mines were formerly owned and operated by the New River Collieries Co., controlled by the Guggenheim group.

One of the largest coal companies launched in northern West Virginia in some time is the Continental, capitalized at \$709,000. The incorporators are Howard W. Showalter, Samuel R. Hite, J. W. Mason, Brock Showalter and A. D. Showalter, all of Fairmont. Howard W. Showalter is president and A. D. Showalter is treasurer and purchasing agent. The company is purchasing about 1,000 acres of Sewickley coal near Cassville, in Monongalia County, and in the Scott's Run field. The company plans to install a large plant, including a modern tipple. Coal will be

mined through a shaft which is to be sunk to a depth of about 200 ft. and work on which, it is understood, will be started in the near future. It is planned to produce coal at the rate of between 3,000 and 4,000 tons a day.

The Elgasco Fuel Co. has just been organized by Bluefield capitalists to operate in the Pocahontas region, being capitalized at \$50,000. Bluefield is to be the general headquarters of the company, in which the following people are interested: E. S. Crockett, H. W. Crockett, R. F. Smith and Thomas H. Scott, all of Bluefield, and R. A. Crockett, of Graham.

The New England Fuel & Transportation Co. is doing work preliminary to the installation of a new plant near Arnettville in the Monongalia County field, to be known as No. 4. Excavating is now being done by a force of about 20 men in preparation for the sinking of a shaft. In the Arnettville section, the company has about 3,000 acres of low-sulphur Pittsburgh coal available for development.

At the invitation of E. E. White, president of the Winding Gulf Coal Operators' Association, the delegates attending the National Tax Association at White Sulphur Springs, made a tour of the Winding Gulf district. A special train on the Chesapeake & Ohio railroad was provided.

Chief R. M. Lambie of the Department of Mines was in Wheeling and Benwood recently inquiring into the recent mine explosion at the Benwood mine of the Wheeling Steel Corporation, which resulted in the death of three men. Holding of an inquest was deferred until the head of the Department of Mines could be present.

During August eleven companies were organized to engage in the coal business. The aggregate capitalization of new resident and non-resident coal companies formed was \$2,620,000. In the list of resident corporations organized were: Shenandoah Coal Co., Logan, \$75,000; Coolidge Coal Co., Fairmont, \$50,000; Jennings Coal Co., Monongah, \$25,000; Tildesley Collieries Co., Charleston, \$100,000; Prestonia Coal & Lumber Co., Sutton, \$200,000; Old Furnace Coal & Iron Co., Kingwood, \$1,000,000; Hayzelett Coal Co., Mullens, \$10,000; Mudd Creek Coal Co., Kingwood, \$200,000; Batelle Colliery Co., Charleston, \$200,000; Unity Coal Co., Wheeling, \$10,000; Roaring Creek Coal Co., Elkins, \$50,000. New non-resident coal corporations organized were: Charleston Coal Corporation, with chief works in Tennessee, \$50,000; Index Mines Corporation, of Parkersburg, with chief works in Colorado, \$100,000; The Crane Fuel Co., of Cincinnati, \$200,000; Peerless Coal Mining Co., of Baltimore, Md., \$250,000; Randazzo Elkhorn Coal Co., of Huntington, W. Va., \$100,000. The Lambert Run Coal Co. has increased its capital stock from \$25,000 to \$500,000. C. D. Robinson and others are interested in this company, which operates in northern West Virginia. The Cardiff Pocahontas Coal Co. has increased its capital stock from \$75,000 to \$100,000, and the Robinson & Hardesty Coal Co. has increased its capital stock from \$25,000 to \$50,000.

WISCONSIN

Milwaukee or any other city in the state has the power to distribute coal in the event that dealers charge exorbitant prices, says a ruling of the Wisconsin Department of Markets. A margin of 20 per cent profit is held as a fair compensation to coal dealers. The department quotes the law, which says "any city may by a vote of three-fourths of all the members of the council establish and operate equipment for the purchase, sale and supply of fuel to its citizens, under regulation of the council."

WASHINGTON, D. C.

The publicity committee of the National Coal Association for the coming year is as follows: G. H. Barker, vice-president, Maynard Coal Co., Hayden-Clinton Bldg., Columbus, O.; C. E. Bockus (chairman), president, Clinchfield Coal Corp., New York; A. W. Calloway, president, Davis Coal & Coke Co., Philadelphia; W. H. Cunningham, president, Cunningham, Miller & Elmslow, Huntington, W. Va.; C. C. Dickenson, president, Dry Branch Coal Co., Charleston, W. Va.; G. M. Gillette, manager, Consolidation Coal Co., Frostburg, Md.; T. W. Guthrie, president, Hillman Coal & Coke Co., Pittsburgh, Pa.; M. B. Lanier, president, Empire Coal Co., Birmingham, Ala.; F. S. Love, general manager, Union Collieries Co., F. W. Lukins, president, Farmers' Fuel Co., Kansas City, Mo.; W. E. Maltby, manager, Washington Coal Producers' Association, Seattle, Wash.; P. H. Penna, secre-

tary, Indiana Bituminous Coal Operators' Association, Terre Haute; R. M. Randall, general manager, Consolidated Coal Co., of Saginaw, Saginaw, Mich.; S. H. Robbins, president, Youghiogheny & Ohio Coal Co., Cleveland; Edward Soppitt, president, Erie Coal Mining Co., Butler, Pa.; C. W. Taylor, vice-president, W. G. Duncan Coal Co., Greenville, Ky.; C. M. Watt, general manager, Loyal Hanna Coal & Coke Co., Philadelphia; E. E. White, president, E. E. White Coal Co., Glen White, W. Va.

CANADA

The Dominion Government is urged to extend the scope of the Royal Commission which has been appointed to investigate working and living conditions which resulted in the steel workers' strike of July last, to include an inquiry into the difficulties which have confronted the coal miners in their dealings with the British Empire Steel Corporation in a resolution drawn up at the regular meeting of the Town Council of Glace Bay, copies of which have been sent to the Prime Minister and the Minister of Labor.

The Grand Lake Coal & Railway Co. has been engaged in moving equipment and miners' cottages from the South Minto soft-coal mines to the newly developed areas at North Minto, a distance of three miles. The South Minto mines will be continued in operation, on a smaller scale.

The Canadian National Railways will construct an extension to their branch line, connecting the Grand Lake soft-coal fields with the main line of the transcontinental system. The line will be built from Chipman to Minto, a distance of seventeen miles. It is expected that a number of independent mines will be opened in consequence of this extension.

J. B. McLashian and Dan Livingstone, former U.M.W. officials for the eastern Canada district, who were deposed by President Lewis, have been denied a change of venue in their trial for seditious libel.

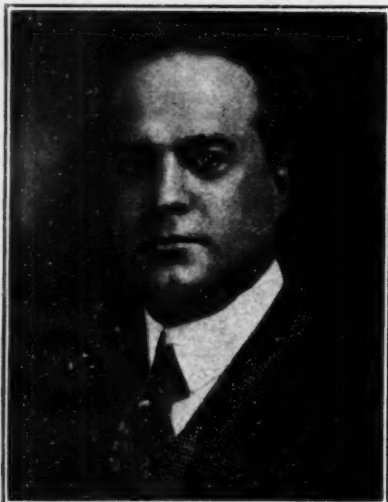
The Alberta Carbon Coal Co., Ltd., has been formed for the exploitation of 2,640 acres of coal lands in the Carbon District, twenty miles west of Drumheller. The seam to be developed is reported to be 5 ft. thick and to be capable of producing some 10,000,000 tons of coal. The company is capitalized with a share capital of \$500,000 and \$100,000 first mortgage 8 per cent gold bonds. H. Ransford is the president and W. P. Hinton, former general manager of the G. T. P., is a director.

The Dominion Fuel Board, which has been conducting an inquiry into the feasibility of establishing byproduct recovery coke ovens in some of the large cities, has nearly finished its work. Charles Stewart states that the survey has shown the demand to warrant the establishment of plants at several points in eastern Canada. Financial circles in Montreal and Toronto are awaiting with keen interest the final report of the Fuel Board. In conjunction with the Mines branch the board is investigating the coking qualities of the Nova Scotia and New Brunswick coals and arranging for commercial tests on a large scale in addition to the laboratory investigation.

Output of coal from Canadian mines during June amounted to 1,304,000 net tons, an increase of 4 per cent over the previous month, according to the Dominion Bureau of Statistics. This was 29 per cent over the average for the corresponding month of the three preceding years. The output for the month showed increases of 63,000 tons in Nova Scotia, 53,000 tons in British Columbia and 3,000 tons in New Brunswick. In Alberta there was a decrease of 69,000 tons. For the first half of 1923 the cumulative output from all mines amounted to 8,722,000 tons, an increase of 25 per cent over the preceding three-year average for the same period. Importation of coal during June was 2,562,000 tons, as compared with 1,634,000 tons in May. Of this tonnage 79,400 tons came from Great Britain. Anthracite imported during the month totaled 505,900 tons, 17 per cent greater than in May and 47 per cent higher than the three-year average for the month. The United States furnished 479,200 tons of this amount, 26,700 tons coming from Great Britain. Exports during June were 101,400 tons, as compared with 99,100 tons in May, a decrease of 43 per cent when compared with the June exports of the preceding three-year average. The tonnage available for consumption in Canada during the month was 3,765,400 tons, or 33 per cent more than in the preceding month. Men employed in the coal mines during June totaled 27,669, of whom 20,615 worked underground and 7,054 were surface men. The production per man was 47 tons for June as against 45 tons per man in May.

Obituary

Kuper Hood, vice-president and manager of sales for the Houston Coal Co., of Cincinnati, died Sept. 28 of a throat affection. Mr. Hood, who was born in Stanton, Va., on Nov. 23, 1874, had been sales manager first for the Big Hill Coal Co. and later was associated with the Kentucky Fuel Co. at Atlanta, Ga. In 1910 he joined the sales force of the Houston Coal Co. as assistant general sales manager, succeeding to the



KUPER HOOD

direction of that department in 1912. In May, 1923, he was elected vice president of the company in charge of sales. He also was a member of the foreign trade committee of the National Coal Association.

Benjamin Crosby Davidson, former Mayor of Uniontown, Ky., owner of the Davidson Mines and later general manager of the Uniontown Coal Co., until it was sold, died at his home in that city on Sept. 18. He is survived by his wife, two children, a brother and two sisters.

C. D. Robertson, for the past six years fuel inspector for the Seaboard Air Line Ry., died at his residence at Birmingham, Sept. 20, after a short illness. Mr. Robertson was 53 years of age.

Trade Literature

The Timken Roller Bearing Co. of Canton, Ohio, has issued an attractive 6x8-in. booklet entitled **Better Mine Cars with Timken Tapered Roller Bearings**, containing 32 pages. The booklet contains seven chapters and numerous illustrations showing Timken equipment at coal mines.

The Ohio Brass Co., Mansfield, Ohio, has published its 1924-1925 No. 19 catalog, covering high-tension insulators, trolley-line materials, rail bonds and tools and car-equipment specialties. The book has 770 pages, 6x9 in. It is well illustrated and indexed for ready reference.

The Industrial Works, Bay City, Mich., has issued a golden anniversary catalog commemorating 50 years' service. It describes cranes for all purposes; their use in coal handling and storage is covered, together with power wheel buckets, dragline buckets, etc. Book 115. Pp. 161; 8x11 in.; illustrated.

Single-Line Buckets, Blaw-Knox Co., Pittsburgh, Pa. Bulletin 812. Pp. 18; 8x11 in.; illustrated. This bucket uses the same hoisting line for closing and for supporting it during opening, and can be hooked on or direct reeved to hoist. Single-rope cable-way requiring only one hoisting drum is described.

Electric Industrial Trucks and Tractors, Crescent Truck Co., Lebanon, Pa. Pp. 47; 8x11 in.; illustrated. Among the trucks described are the side-dump and end-dump types. Specifications of the different trucks and trailers are given.

"Large Polyphase Induction Motors" are covered in Bulletin No. 1087, just published by the Allis-Chalmers Manufacturing Co. The more general application of large hoists, fans and compressors around the coal mines

is greatly increasing. This bulletin covers many points of design and operating characteristics of large induction motors.

Association Activities

A coal shortage in Texas and throughout the Southwest was predicted by C. R. Goldman, secretary of the **Texas Retail Coal Dealers' Association**, before a conference of coal operators, wholesale and retail coal dealers and railway officials held in Dallas recently. Mr. Goldman declared that many miners formerly employed in the mines of the Southwest had gone to other parts of the country on account of the lack of work during the summer. Individuals and many factories, apparently lulled into inactivity by the memories of mild winters for the last two years, have failed to consider the question of fuel for a possibly severe winter. Mr. Goldman said, and the result is that practically no coal has been stored by home owners and factories against the winter needs. Railroad men of the Southwest who attended the conference pointed out the gravity of the situation that will result when cold weather comes and the public rushes in to buy coal.

The **Baltimore Coal Exchange** held its annual meeting Sept. 25, and elected Hugh C. Hill, president; Benson Blake, Jr., vice-president; L. C. Wilcox, second vice-president; J. E. Waesche, treasurer, and Julius Hellweg, secretary.

After Oct. 1 the offices of the **National Retail Coal Merchants' Association** will be located in the Transportation Building, Rooms 705 to 710, inclusive, Washington, D. C.

Publications Received

Internal Combustion Engines, by Robert L. Streeter. Second edition. Pp. 443; 6x9 in.; illustrated. Price, \$4. A thorough revision of this standard textbook on the fundamental principles of the theory and design of gas and oil engines. The book is especially adapted for class and drafting-room instruction; it includes a collection of useful problems. McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York City.

Principles of Direct-Current Machines, by Alexander S. Langsdorf. Third edition. Pp. 455; 5x8 in.; illustrated. Price, \$4. A reasonably complete treatment of the fundamental principles that underlie design and operation. It concentrates attention upon certain important features that ordinarily are dismissed with a little more than passing mention. Among these are the material on armature windings, operating characteristics of generators and motors, and commutation. McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City.

The Work of the Pennsylvania Survey, 1910-1922, by George H. Ashley, State Geologist, Harrisburg, Pa. Pp. 18; 8x10 in. Describes the organization, administration, information service, publications and surveys. Charts showing progress in topographic and geologic mapping are included.

Traffic News

John Morris, regional director of the American Railway Association and the Cincinnati Terminals, has called a meeting in Cincinnati of the prominent shippers of the coal and other commodities to go over the situation as it appertains to the empty-car requirements and the movement of the heavier classes of freights. Coal men of prominence from all the fields within the territory under the jurisdiction of Mr. Morris have been invited to attend the meeting and to offer their suggestions as the best means of keeping the freights moving.

The I. C. C. has directed the anthracite carrying railroads to file a brief before Oct. 22 showing why railroad rates on anthracite should not be reduced, as asked by the U. S. Coal Commission. A committee of general solicitors of this group of carriers, of which H. A. Taylor of the Erie is chairman, is now preparing this brief. The call for the brief was made by the Interstate Commerce Commission following the hearing held in Pittsburgh before Attorney Examiner William A. Disque on Sept. 24-25. Mr. Disque, after studying the brief of the railroads against a rate reduction, will make a report to the full commission, which

will be studied by the latter, together with the actual brief of the carriers. The commission will then hand down its decision. In addition to the general brief being prepared by the committee, separate briefs may be filed by any other road which chooses to do so. The Erie has definitely decided to file no separate brief. Separate testimony has been prepared and submitted to Examiner Disque by the Delaware & Hudson and the Boston & Maine. The original plan to send out a questionnaire to the different hard-coal carriers has been canceled.

The Interstate Commerce Commission hearing in the case of the **United Collieries, Inc., vs. the Southern Ry.**, which was assigned for Oct. 11 at Big Stone Gap, Va., before Examiner McGrath, has been postponed indefinitely. The commission also has cancelled the hearing in the case of the **Pioneer Coal and Coke Co. vs. Pennsylvania Railroad**, which was assigned for Oct. 23 at St. Louis, Mo.

Oral argument will be heard Nov. 8 by the full Interstate Commerce Commission in the following important cases: Cancellation of rates on coal from Kentucky, Tennessee and Virginia to Minnesota points via the Chicago, Rock Island & Pacific Ry.; Cedar Rapids vs. Chicago, Rock Island & Pacific Ry.; United Light & Railways Co. vs. Chicago, Rock Island & Pacific Ry.; coal from Kentucky, Tennessee and Virginia points to Northern and Northwestern destinations. On Nov. 15 the commission will hear arguments in the case of the Northwestern Coal Dock Operators' Association vs. the Chicago & Alton R.R., and in the case of the Illinois Coal Traffic Bureau vs. the Chicago & Northwestern Ry. On Nov. 19, Division 3 of the commission will hear the case of the Colorado & Utah Coal Co. vs. the Denver & Salt Lake R.R. On the day following, Division 4 will listen to oral arguments in the case of the Lincoln Gas Coal Co. versus the Baltimore & Ohio R.R.

The car service division of the American Railway Association announces that the railroads on Sept. 15 had 165,284 freight cars in need of repair, or 7.3 per cent. of the total number on line. This was a decrease of 10,043 compared with Sept. 1, at which time there were 175,327, or 7.7 per cent.

The railroads on Sept. 15 had 10,792 locomotives in need of repair, or 16.3 per cent. of the total number on line, according to reports filed with the car service division of the American Railway Association. This was an increase of 275 over the number on Sept. 1, at which time there were 10,517, or 16.3 per cent. The railroads on Sept. 15 had 2,914 serviceable locomotives in storage, where they are to remain until traffic conditions warrant their use.

That Henry Ford has purchased \$1,807,000 worth of coal cars is revealed in his objection filed against the Interstate Commerce Commission's assigned-car decision.

An application for permission to build six miles of new line from Oakland City, Ind., into Pike County has been filed with the Interstate Commerce Commission by the Evansville, Indianapolis & Terre Haute Ry. The petition says the line would serve a large area underlain with high-grade coal which could be mined cheaply by stripping off surface soil with steam shovels. The Commission had previously in the case of the Virginian Ry. of West Virginia refused to allow such an extension on the ground that there already are enough coal mines in the United States. The latter case is up for a reconsideration on the petition of the railroad company.

Coming Meetings

American Gas Association, annual meeting Oct. 15-19, Atlantic City, N. J. Secretary-Manager, Oscar H. Fogg, 342 Madison Ave., New York City.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting Oct. 19-20 at Huntington, W. Va. Secretary-treasurer, Herbert Smith, Robson-Prichard Bldg., Huntington, W. Va.

American Welding Society, Oct. 24-26, Pittsburgh, Pa. Secretary, M. M. Kelly, 33 West 39th St., New York City.

Harlan County Coal Operators' Association, Nov. 21, Harlan, Ky. Secretary, E. R. Clayton, Harlan, Ky.

Coal Mining Institute of America will hold its annual meeting Dec. 19, 20 and 21 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Building, Pittsburgh, Pa.